computer-driven page make-up system at the Daily Mirror have led its management to drop the development, for the time being. and revert th manual make-up by cutting and pasting.

The Linatype-Paul system using large storage CRT screens Itel Corp acts to was taking much longer to assemble pages than treditionel serious production delays.

Jail terms cut
TWO men who were jailed at the Old Builey last year for a 0275,000 blackmail attempt

A Vert leasing crisis

C275,000 blackmail attempt ngainst ICI (CW. February 9, 1978) had their sentences reduced in the Court of Appeal last week. Rodney Cox, 28, a senior operator at ICI's Rotterdam site, and Peter Jenkins, 28, a treelance programmer, had their six and five-year terms reduced to lour and three years respec-

PO micro trial

A TRIAL of automatic call recording equipment beginning this Saturday in Eastbourne. brings interoprocessors into the telephone network for the first time in the UK, and possibly in the world, according to a Post Office spokesman, if successful, the ACRE equipment will be installed throughout the network from 11181, climbrating the need for telephone operators to write a ticket for each call connected

Staving off a 'jobs holocaust'

effects on the present-day work ethic, Clive poat-industrial dark age." Jenkins, head of the Association of Scientific, Technical and Managerials Staff, and Barrie Sherman, research director for ASTMS, have urged a "multl-dimensional approach" in our attempts to stave off a

With the above statement, Jenkina and Sherman round off their book, The Collapse of Work", which explores the potential demise of the work ethle and how society la (or is not) assimilating new technology.

One of its themea is that "Industrialised societies will not, in the future, be able to provide work for all on a continuing basis." But this need not be disastrous, they say; Instead we will have the prospect of ex-

DRASTIC steps are being taken

at Itel Corp to secure Its future

following the body-blow to Its

leasing husiness from the IBM

4300, and whrse than expected

sales for the AS line of IBM-

The company is understood to

have made a major transaction

with a private finance company

involving sale of the residual values of computers and trans-

The company's problems have

surfeced because it has been in

process of lasting two million

last week it cancelled the

In the preliminary prospectus

for the stock Itel reveals a first

quarter loss on computer sales

and leasing of \$4.4 million.

which is a turnround of slniost

\$10 million compared with the

\$6.3 million profit it made in the

unita of preferred atock. Late

compatible CPUs.

port assets on lease.

offen ng.

Available NOW LA 34 DECWriter IV BIDGITUDE CLA 30 CPS desktop printer Character Charac

Smaller, lighter and quiatar than many typewriters.

Echeld House 641 London Boad West Thurrock Essex

♠ Per fice (104026)7161 Telex 896786

Regional offices in London, Midlands and Bristol

MPUTER MARKETING

Standard features include a certridge for simpla

ribbon changes end condensed characters.

November Laboratories' intest range of VOUs: the M22 high spood, paper-tape reader punish: the versible Telly T1012 160gp bi-directional persion: and the full earnge of OEC LSI-11/2 systems and consponents.

STATING that there is no one solution to the problems created by the free advance- ploiting what thay call "great opportunities," while against that will be the and Sherman suggest that "prevention is

A deciding fector in all of this would of course be the types of deciaions taken both nationally and globally, some of which may indeed "fly in the face of established political practice and need international courage and

A topic well-known to the authors is that of the role of trade unions in society, and of powerful, intellectual response from the trade union movement."

Also: "Well organised trade unions in any country hold the keya to the quality of life in

ment of technology, particularly in its possibility of a "backward step towards a better than cure" and among the proposals to be found there is the setting up of the new public sector funds - one based on North Sea oil revenues, the other on pension fund capital. They also call for education and

retraining schemes to be implemented to handle the fall-out of workers.

"It is impossible to over-dramatise the forthcoming crisia, as it potentially strikes e blow at the very core of industrialised this they say: "The new technological societies - the work ethic," write the autchanges will, as we shall see, have to elicit a hors. "We have based our social structures on this ethic and now it would appear that it is to become redundant along with millions

*The Collapse of Work, by Clive Jenkina and Barry Sherman, £3.50, Published by Eyre

Go-ahead for NEB's £8m disc investment

LEGAL obstacles in the wey of the Netionel Enterprise Boerd'e plen to invest £8 millien in a diec drive plent to be set up jointly by Data Recording Instrument end CDC subsidiery, Mognatic Peripherals Inc., heve been overcome and the project with now go shead with the blaceing of industry Minister Str Keith Joseph (CW, May 24). The Minister has elec-

approved the outley of ebout £1 million more to buy out the 13% minority shereholding of Grundy of Teddington, which had objected to the venture. Grundy hee now sought leevs to withdraw its suit from the

Appeal Court.
The nsw compeny will be 76% owned by DRI and 24%

CPUs come up for renegotiotion. Strikers cause £350m phone bills backlog

NOW into its alghth week, the atrike by Post Office computer and clarical staff has craated a phone billing backlog of about £350 million and shut down all main Syatem X development centrea (CW, May 17)

\$800,000 Including two

Megabytes of memory, against \$245,000 for a two Megabyte

4341. Itel's retrenchment has also

included a complete withdrawal

from the minicomputer mar-

keting business, including can-

cellation of plane to sell the Data

General CS line of business sys-

Things look brighter for Itel in

the second half of the year, when OEM prices for National

Semiconductor and Hitachi

he deal because its accountants It has bean revealed that wanted it to reduce the book value of the computers to a more among spacial conditiona attached to an unofficial corporealistic figure. The deal waa ration proposal to restructure all possible because many of the grades, are the introduction of transportation assets were on contract and part-time DP staff Itel's books at wall below thair within the Data Processing Sar-Under US Securities and Exvice and the acceptance of word processing equipment into the change Commission rules, Itel

cannot make any comment A apokesman for the Society other than what is in the prospectus. However, an amendof Civil and Public Servants said, ment to the prospectus statea "The Poat Office has made et that first-half results will be least two large loans that we substantially down and that the know of. One example of how computer sales force has been the dispute is affecting its cash reduced. The reduction la flow is that one area that would iderstood to be at least 30%. normally toke in £28 million i thought to be about 100 people. about aeven weeka has only Observers say that Itel has been paying National Semiconreceived about £104,000." Engineera at two GEC ductor \$350,000 for AS/3-5 pro-Coventry works voted last week to cut their ovarall pay claim cessora, making it very difficult

to aell profitably egainst the When announced (CW, March 1), the 3-5 was offered at pended by the company for not

Itel also says that Its sggre-gate claims under the Lloyds "J"

policy with which residual

values of leased computers were

insured are expected to exceed

ltei has struck a complex

financial deni with Hillman of

Pittaburgh, under which it has

pald Hillman \$12.5 million in

what is colled n "put" option.

This is on the residual values of

all Itel's icased equipment, in-

cluding \$48 million of computers

and about the same value of

ships, containers and railway

The option means that Hill-

man has agreed to buy these

residuals at their book value if

Itel asks them to, and has been

paid \$12.5 million for ogreeing to

do so. However no money has

changed hands. Instead, the

asseta have been put into a new subsidiary, valued at \$12.5 mil-

ilon, run by itel-but owned by

Hiliman, which will actually

It appears that Itel concluded

guidate the sasets.

current value.

working normally (CW, May 17). The engineers, apart from the 87 suspended, have ulso agreed to return to normal working pending aettlemant.

Irwin Kwatek, an existing G executive. John Conion, whi joined the board in 1975, be comes chairman.

For details of PAC II, the world's leading project planning and control system and your Iree postar showing 'The Laws of Project Management', complete the coup

Six hundred users can't be wrong.

Maira Lowndes-Alax 17 Lanadowna Road Croydon CR02BX... Telephone 01-680 2400



Tel, 01-882 9401 Teles: 201344

ATLANTIC **AVAILABLE FOR** SALE OR LEASE

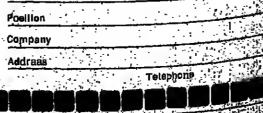
370/138. JOO English Language 370/145. IO2 or IH2 fully featured 2821:2/1403. NO1/2501.602

Please call us for sale or Reviesse prices

from 23% to 1S% and to support

financially 67 commissioning

engineers who have been sus-



Printed in Great Britain by Q.B. Limited, Sheeped Pilos, ester, CO3 3LJ, and cubilened by IPC Electrical Richtons, Ltd. Dorset House, Stamford Street, London, SEJSLU.



Haan computars to

5, the Poultry, Nothingham

toppled-by

THE founder, chairman at

president of General Autom

tion, Larry Goshorn, has been

toppled in a paiace revolute.

and a professional computer

company "doctor" has bee

brought in as president and did

executive. Goshorn stays on at

director of the Anabela

California-based minimale.

and it is not relinquishing as-

troi of the company without

As half-time figures of hi

million net profit on \$53 mba

turnover for the six months o

January 27 indicate, the con-

pany is in no immediate trooks

but the hoard hopes by the rex-

gunisation to achieve fasta

fitubility.

growth and improve pro-

New man of the top is frank

Grisanti, whose manageme-

consultuncy, Grisanti and Gr

of Los Angeles, speciale

improving the performance!

Grisanti described Lim

Goshorn in turn desembl

Goshorn as a "technical gently

Grisanti end Gallf as "got!

people", but claims that hear.

legolly chairman and presiden

two nedditional board membra

inwyer Dennis Nystrom ala

becomes General Counsel, and

Other changes announced us

computer companies.

stays as

0(0:(0002)

TEXAL!

Number 656

"Thursday, June 7, 1979

Price 18p

NEWBURY

Visual Display Terminals PRICES ... FROM £495

Newbury Laboratories Ltd. Head Office & Sales King Strest, Odiham Hempshira RG25 1NN Tel 025-871 2910

Telex 858815

Briefing

Magnuson raises \$10m

raising ability expressed by New chips. York stockbrokers, Paine Web-

Magnuson's M80 family of IBM 4300 compatible machines should be available in Europe by the end of the year. The working capital was raised from a number of sources in return for a total of 23% of Magnuson shares.

Bow Group on NEB

THE National Enterprise Board should be merged with the Brilish National Oil Corporation in order to help finance strategic new Industries with North Sea oil revenue, according to the fory Bow Group. In a paper, the NW Group asserts that the NEB should carry on subsidising ventures such as inmos, but should lose to other bodles ita functions of supporting lame ducks and promoting axporta andregional development.

Faster disos

TWO new low-cost fixed discs or Data General Nova and clipse minis, and the Micronova computer-on-a-chip, feature microprocessor-controlled "seek" mechanisms for increased speed, and Winchester technology. The units hold 12.5 Megabyies and cost around

Bank shifts

SEVEN DAY working has been agreed to by Barclays Bank computer staff following a recent ballot. The sgreement will mean that staff will work between 33.5 to 35 hours a week id receiva a shift allowance of 45% of salary - providing this falls between minimum and maximum annual paymenta of fl,131 and £2,868.

off to the club

BECAUSE of the shortage of arketing department staff are to be moved to the Stoke Country Club, Stoke Poges, for up to six months while the company attempts to find new office space in Slough. According to he company, "all the ataff ere very pleased with the arrangements for the move, which are the normal terms offered in auch

Two deals off

ACQUISITION talks with Thorn Gould have bean broken off by the Florida-based mini Assulacturer, Modcomp, and tha company now intends to remain independent. In another leke-over scheme, Bunket Ramo has rejected the bid of 20%. shareholder Fairchild Industings for a full merger.

Crowds queue in the rain for the NCC

TIM PALMER reports from New York

UMBRELLA seilers did a brisk business as thousands of ahowgoers lined up in persistent rain to register for the National Computer Conference at New York's Coilseum thle week. Among the main attractions of IBM-COMPATIBLE processor this show were the enhanced manufacturer, Magnuson Computers has raised nearly \$10 million of working capital for expanding its production and marketing operations, dispro- Mbyte memory board for its ving the doubts about its capital minis. This is made of 64K bit

For Dataproducts the ocquisiber Milchell Hutchins (CW, May tion of Plessey Inc. the UK word single processor to group's printer division (page 2), \$1,442,000 for a 1 Megaword dual

THE flercest challenge from any

manufacturer to IBM'a plana for

the electronic office market wos

announced by Wang at the NCC

In New York on Monday. The

equipment introduced includes

an IBM-compatible electronic

mail facility; the integration of

word and data processing on

both of Wang's main ranges, the

VS mainfromes and the OIS

word processors; and a new

is a 32-bit processor with 64-bit

highway, costing \$93,000 for a 1

Megabyte system, comparad with \$245,000 for o i Mbyte 4341

Fortran and PL/1 will be

A new database system com-

bining both features of network

and relational databasas has

also been added for the VS eya-

tems. Kay communications faaturaa

are tha announcement of 2780,

available next year for both

modals in the VS lina in addition

to the exiating Cobol, Basic and

This last machine, the VS-100,

370/158 class VS model.

from IBM.

gave the company entry to the daisy wheel market and in New York Dataproducts launched a 50 chps dalsy wheel printer developed by Plessey.

New York ond yeaterday,

Wednesday, in London. Prices

range from \$319,000 for a 512K

office market

tems, IIS, are achieved by Wang

In two ways. The company's

word processing workstations

store almost all the required

functions locally, and are now

attachable to VS and VS-100

systems in any mix of word and

At the same time Bosic has

been ndded to the OIS line of

word processors, anabiling users

dato processing stations.

As exclusively reported In two models, the 850 and the 870 which run the well-established 19). Burroughs has adopted the

Xerox 9700 high speed page

The innovative bit slice Uni- printing system after evoluating vac 1100/60 (CW, May 17), was Siemens' ND2 laser printer. It formally announced on Tuesday was announced at the NCC as the B9270-35, Incorporating a Digital Equipment PDP/II It runs at up to 18,000 ipm.

Neatly leapfrogging the 32-bit

Other Introductions from

Wang were two new OIS

models, the low cost 125 and the

top end 145, and n dual daisy

wheel printer for users wanting

Other Introductiona from

Wang were two new OIS

models, the low cost 125 and the

we will have to address the most

common communication needs

ICL, he argued, was well

placed to implement facilities along with the emerging etanderds, being closely in-

voived with standards activity.

it would also benefit from its

"onion skin" communications

architectura, which would per-

iCL has not as yet announced

stance ia seen by users aa a con-

tinuing policy of "ona-off" com-

lines of IBM's SNA or Bur-

mit it to replece levels with each

In the Interim."

to combine type founts.

mini makers. Harris has added a

be marketed in the UK by EMI Technology. First personal Wang's bid for system

Vuican operating aystem.

installing communications soft-

ware on the IBM host, and Plx-

net extends this by supporting

multiple hosts and allowing in-

teractive terminals to connect to

multiple applications programs

thoughout the network, it will

from Texas The eli-out attock on the perso ron: Teses Instruments com last week at the Chicago Consumer Electronice Show, but it has already boan labelled as disappointing. However, it will be one of the first 18-bit home computers to reach the market.

Instead of the espected three prongsd sattry (CW, April 12) Toxss hes introduced the 89/4 that is elmed specificelly et the domestic end eon sumer morket. Bassd on the Tesas 9900 hip, the system is a keybos besed unit with asparate 13

inch, NTSC stendard colour dia-play. In the UK, the system will cost £848 escluding the die-play. The oil-in U8 price is \$1,150.

The system has a non-sependable 19K byto user memory, backed by 28K bytes of operating system and Ti se-tended Basic software in ROM. The 89/4 will be available in end of the year, and should be systistic in this country a little

Racal plans Ferranti bid if NEB Paradyne has added a new product, Pixnet, to its Pix II communications system for IBM mainfromes. The Plx concept is is trimmed to add communications without

RACAL will be making a strong bld for Ferrantl If the government goes ahead with its declared intention of cutting back on National Entarprise Board activities. Confirming this, Recal chairman Ernest Harrison said his group would not be interested in acquiring any of the projects started by the NEB,

such as inmos, Insac and Nexos. In his view the board should not have become involved in establishing new companies, but there would continue to be a need for the NEB, or some similor government-supported hody, to manage the industries which would not go book to the private

Harrison said any hreak-up of the NEB had to he done with care to ensure that the good management that the board had should be kept to handle the unsaleabic compenies. Harrison was not blind to the henefits to be gained from some government ald.

Giving his annual review of Racal's progress, Hnrrison said that the company had just received a £1.4 million order rom the Post Office for Racal-Milgo MPS 48 modems. These were for use on the new Datel 4832 service, and it was the first time that a major order had been ploced by the PO for proprietary

datacnnims.
Outlining the group's performance, Harrison said it had been the greatest year in the group's history, with soles up to the end of March reckoned ot £225 nillllon showing a pre-tax profit of

top end 145 and a dual dalsy to add data processing applications, All VS and almost all word wheel printer for users wanting processing users can add all to combine type founts. ICL clarifies stance on open systems networks

ICL re-affirmed its long-term "and we cannot walt. In comcommitment to open systems mon with other manufacturers, networking based on intarnational communications standarda at tha 2900 Club meeting last week. At the same time it made clear that its shortterm atrategy was the davelopment of the Craam family of microprocessor besad protocol convertera, first revealed at the CUA meeting last month (CW,

3780 and 3270 protocola for both the OIS and VS linee; these protocols are also supported by tha Maliway electronic mail con-'It could well be 10 yaars troiler enabling both text and befora firm intarnational standard as it appeared. data messages to be transmitted stendards appear for open networking," noted Jeck Houlds- a networking architecture along between OIS word processora end VS computars, and to IBM

Integrated Information Sya- worth development centra, roughs' BNA and its present

THE 2900 SCENE ALSO ...

ICL 2800 users met in London lest week to discuss the successes and problems of their systems, and to hear about developments from ICL representatives. This week Softare file is devoted to reporting

A BASIC FLUTTER

So the Derby is over for ano yeer, but for the committed punter that is just enother rate and the opportunities for winning open up with every new repits day. Frofessor Frank George, who has already produced a guide for pools addicts, now turns his hand to the Sport of Kings.

Computerview on public Ignorance Focus on DP health Jepsnese plans ... Mirror anger over new technology Gilb's Mythodology Infewere Flis Op Spot People in the News

Diary Dates Unions stress training licro News mproving your system tuning reaking the barriers of specheld computestors results

munications specials.

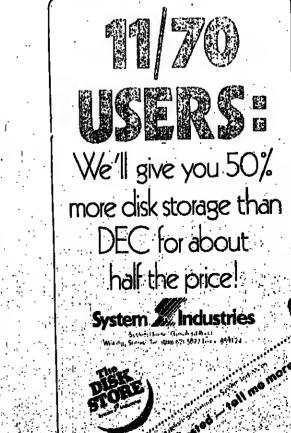
A network architecture has, however, been expected for aome tima and may be ennounced in Novambar, according to one source. :

Usars are also atill waiting for the Intagrated Communications Executive (ICE) for the popular 2903/4 systems. Thought to aupport extansive interconnection of 2903s and 2904s, ICE is believed to be under tast release et a faw UK sites and may be

released later this year.

The 2900 Club meeting addressed itself to the topic of communications excellance and focused chiefly on the communicetions fectilities of VME/

Full report page 7.



01-261 8503

Branch Offices: Birmingham: 202 Lynton House Welfall Road Birminghom 228 Deleptions 021-156 4838

Naw York: 205 East 42nd Street, New York, a NY 101417

el (2) 2) 867 2080 Tales 421710

Finished weekly on Thursday Registered of the Post Office as a newspaper Pose per copy 18p

IPC Businnss Press LFd F879.

CIRCULATION INQUIRIES
Requested Roodsrehip: 01-837
3636 Subscriptions: 0444 59188.

Members of Coreputer Workly statt may be costacted directly on the extensions listed below. Other de partmests in Corest House may be obtained by disilling (01) 281 8080.

281 8031 281 8303 281 8025 261 8808 281 6170

281 8843

081-872 421)

021-388 4838

861-872 4211

201 8878

2e1 ae18

EDITORIAL Kelth Jones
Tim Paimer
Potor Hawill
Rory Johnston
Mertin Sanks
Robin Wabstor
Semord Allan
Doneld Kannen Mike Marples Don Mirchell Chris Yousn Nancy Pocock

Judish Morris AOVERTIAINA Display Chris O'Hee Lloyd Colline Steve Bast ian Censr Menchsster Harry Alkas

Clessified Chrie Prier Eddle Farres Mork Williams John Ferrer Ken Wellord Mork Pulver

Production Devid Abbey

Poter flegis

Computer Weekly has a chosistion each week of ever \$2,000 including the highest fully requested circulation in the UK.
The intersellence adition, which is

Contenter Notice to sent free of charge to the following calegories in the SK and Ske only Compray trectors, occupacy accretories, management services exactives, styl ser-

Controlled Circulation Separtment IPC Surreness Fress (Sales & Sinicibution) 116, 40 Bowlang Green Lanc. Leader Etth Diff. 767. 91-837 956. Debectytions for residen surmer the above categorian Das year. 9K 114,86; Overson CB, MSA, Cornada 878. Remail #277 on page 38. 118. Cornada 878. Almail #277 on page 38.

ISSN 0010-4787



THE letter about computers that for a good deal of disquiet. It reveals in the mind of the writer to impart any genuine understanding of the subject, to this individual at least.

It is eleor that the writer has spent many hours watching television programmes on science and technology, and these programmes certainly purported to be bringing the viewers Truth, to be education rather than entertainment. Yet has totally missed the point of many of the scientific matters that were presented.

In the past Computer Weckly has printed many examples of the funtastic things lay people say about computers, usually displuying either blind fear or an absurdly inflated idea of what with the Press and broadcasting services, whose job it is to bring new ideas to those of the public who have left school.

montily surgery for members of

its new microcomputer users'

club. Once again it seems that

caught the industry with its

on equal rights and opportun-

lties for mainframe equipment,

some basic reoppraisal of the

scheine would seem destrable.

While it may well be feasible to

take a Pet or Cherry to the sur-

gery for consultation, larger

species of computer would not

be so welcome. This is, for a

start, a strong handicap for

Also, the level of surgery

available has yet to be revealed.

Whereas a couple of 'scopes and a micro-sized soldering iron

could sort out micro jevel ali-

ments, more radical treatment

petence of the organisationa.

could well be outside the com-

It would seem that for main-

frame users, a similar project

would be limited to that of an

advisory service. Even so, sur-

geries could be expected to be

crowded with worried, troubled

and tense computing personnal

It may well be necessary, there-fore, to establish separate clinics

to cater for the needs of the

First in the advice centre (by

Installation custom) would be

the operating team, comploining of a severe dose of spiking.

Recommended remedy would be

fuil-scale quaranting of all elec-

tric equipment in and around

Next in line would be the pro-

gramming toam, suffering from

coding spots before the eyes,

Treatment would include com-

plete isolation from VDU

aiysts, complaining that they are

misunderstood not only by their

colleagues but by all the user departments. Confidence-

boosting pills would be issued,

plus some urgent patching of

Predictably also in the surgery

queue would be end user

Also present would be the an-

screens for three months.

sensitive feathers.

But before the rest of us insist

the micro chip movement has

databases well and truly down.

known comic actors to walk was written to a provincial newspaper, quoted by Chad on page 4, may provoke plenty of chuckles, but it should also call fautastic . . the mind boggles . a set of ideas about computers that are so divorced from reality as to Indicate a fundamental failure on the part of the media to impart any genuine underter gives an interesting insight more a groan

problem. They spend countless theorising about how to bring over science to the general pub-lic. At the end of the day, though, when the pencil stubs ore chewed to nothing and the ashtrays are overflowing, they still come up with the wrong nnswers. In television in partithe mochines are capable of cular, those involved will often doing. Much of the blame for admit that they end up choosing this stote of nffairs must rest a scheme that makes "good television" rather than good

> It is the obsession with trying to be entertaining, with trying to

jobs seldom come up to expec-

spend a full working day with

would be tinged with under-

the DPM. Further complaints

Notably first in the surgery

would be the DPM himself. His

symptons indicate a bad case of battle fatigue. The preacription

will include establishing a firm

structure of priorities and dele-

gation, plus the recommenda-

tion to seek a smoother life as a

DPM-in a State-run installation.

Of course, It could be that the

IDPM has it in mind to set up a

mobile consultancy station.

ready to rush to the dire

needs of any installation in dis-

tress. If so, the unit can be as-

sured of a busy schedule. Most

DP managers would willingly

pay the annual subscription for

such an emergency service. The puter Waekly.

1984 and all that...

for DP health

hind schedule while existing thought that a top-level team of

tationa. Remedy would be to engineers could be rapidly sum-

ACCORDING to reports, the Institute of Data Processing Management has established a Processing Management has established and Processing Management has established a Processing Management has established and Processing Management has established and

that writers and television pro- the other channel, that distracts ducers are unconacious of the many a producer from getting the fundamental ideas across. hours arguing, discussing, This problem of how to make an impact, regardless of the subject matter, offlicts everyone who works in the media, but they often fail to see when the subject matler itself can be entertaining, If treated with patience, and if

with a modicum of intelligence. Two recent BBC programmes illustrate this - the first was on Einstein and the second on Time. Both failed sbysmally to get across any rational understanding of the ideas involved (which were of course very pro-

advisors, pius perhaps skilled

moned, would be of great com-

Unfortunately it seems that

initially at lenst, the IDPM

scheme, is limited to micro sur-

geries with a phons-in facility

ioter in the summer. Porticular

emphasis is being given to first-

time business usera, who ure

probably most in need of snund

practical and hopefully rewnr-

seem to warrant aomc in

dustry reward of its own fo

enterprise and originality. But it

must be hoped that the organ-isars haven't overlooked one

vital factor. To establish a pro-

fessional computing surgery,

there should be adequate stocks

on hand of old Issues of Com-

The whole concept would

the resder/viewer is credited

stop viewers from switching to found). Both employed well-

Thankfully the practical experience of computing which many thousands of schoolchildren are now getting will enable the next generation to deal with these problems much more effectively. In the meantime, nowever, the media must make a concerted effort to enlighten the public — to strip away mys-

teries rather than pile them on.

around nottlering "aniazing . .

as "gee-whiz data" was feel to them by scientists who might

have known botter. And when

all the geo-whiz was over, the

viewer, whether well or poorly

The Lancashire Telegraph lea-

into how misguided file as can be

negative). Clearly the idea alread

"energy radiations" being

where people have been comps

from a programme nu infra-red

cameras. The programme failed.

pnint that the camera is regis-tering the residual warmth bet

by the person, which of course

the sum total of ignorance in the

world is steadily increasing, as

technological change outstrips

the capacity of individuals to

assimilate Information. The

implications of this for demo-

cracy are very serious, however.

As society gets more and more

technically oriented it is vital

that the electorate be able to

judge soundly the pronounce-

ments of politicians, to prevent

technological wnol being pulled

In the shorter term, con-

sumers need to be able to rebuft

the ever-persistent excuses of

The computer made a mis-

over its eyes.

The point has been made that

finles awny in a short while.

towever, to get across the basic

nicked up from roughs or beds

educated, was little the wiser.

JUNE 5, 1969 Becsuse of delays and use tainty about ICL's Garage operating system, the Mean of Agricultura want shake in two burseux, CRC (make the company of the past without UK erm of SBI) and Add and Epsom (now part of Original terms) signed operation of SBI Signed Sa. The Mean described as represents.

Bystem. ti had a 100,000 b HQ at Cheltenhem

A DAISYWHEEL printeretduced almost unnoticed extake," or "We can't do that be. IIS last year by Plessey's !cause of the computer," or Coast subsidiary Fie-'You have to do it this way Peripheral Systems in: been acquired by Oataprof. The big OEM line pro specialist of Woodland R. California, has bought the b. printer division for an act

chips daisywheel dence = ? 132-column format, E. plant in Irvine, C. runplicys 85 people mair; printers a month.

From £ 890

From £865

Wilkes TERMINALS VT100 Video Terminal

From £ 1195 digital LA180 DECwriter From £ 197 d gital LS120 DECwriter III From £ 1625

d | g. | | a | LA34 DECwriter IV Newbury Lab's latest range of British VDVI

From £ 495 . 132 col x 24 line VDU with VT52 softwar

TELETYPE

Qume

Perkom From £ 1295 Texas Instruments Rangs of TEXAS INSTRUMENTS. HAZELTINE VDU Range £ 550

TELETYPE 43

SYSTEMS
LSI-II Modules available
Customised to individual

ALL PRICES EXCLUDE VAL

Wilkes Computing Ltd

Bush House, 72 Prince St. Bro-Tel (0272) 290651 or 25921 Tels

QUME SPRINT 5

"It's so hard to weigh up the processed cons [over the European election]," said a chearful woman in the car perk. "We are as poor as crows in Trowbridgs. We want all the information we can get." Her hueband had been deeply impressed with Mr Hoeth. "A morvollous speaker, just like a domputer," he said admiringly.

The Guardian

FORESTRY COMMISSION FARNHAM, SURREY

A PRIZE of £5 is awarded for each contribution from a reader to our

column of the strangs things people say in the media about

A mini-computer system is required to replace and enhance the existing computer systems used by the Forestry Commission to energy date from experiments, surveys and other observations which contribute to problem solving in the creek of forest management and harvesting.

Applications for Operational Requirements should be made within two weeks of the publication of this advert. Applications quoting CEH/36 should be sent to:

MOOR REEO & CO. LTD.

Walworth, Andover Hants

Tel. Andover 4156

Tel.

cashes

MicroCobol

CAP-CPP is beginning to reap the benefit of its substantial investment in MicroCobol,

having now achieved some 50

installations and licensed the

software to 20 OEM vendors. At

the same time it has announced

its first MicroCobol application

packages in the form of purchase, nominal, and sales

Rapid progress has also been made by CAP on implementing the system for new machines.

with 13 hardware types now supported. These include the 18M Series I, DEC PDP-11, Transdata CX400, Sord 223, Tri-

ton 3, Zentek ZMS 70, ADDS

System 70, and Mostek SYS-80F.

ore planned for the current

generation of personal com-

puters, such as the Apple or Pet.

partly because of main memory

A more important reason is

that such systems fall outside

the carefully-defined market

sector currently being addressed by CAP, namely the "explosive"

demand for low-cost micro-

processor-based systems from

That it is aiming at this sector

is emphasised by the substantial

dillerence in cost between

MicroCobol products and

The application packages, for

example, each cost around

£1.009 while the Business

Although only needed by

typical "personai" software.

list-time commercial users.

and storage restrictions.

However, no implementations

edger systems.

COMPUTER WEEKLY

described se represented by machines, was ancoming.

Russie - The first Plant
Mark 1 8250 piries in
memory was delivered in the
Foreign Office commercial. capacity and was for the same an ICL 1906A ordered to same

closed sun.

Operating System (BOS) — a prerequisite for any MicroCobol The AlphaGraftmaterate system - Is priced at £450. vendors and sophisticated end-

users, the MicroCobol develop-ment system — including the compiler, linker, librarian, and editor - is priced at £2,000. while two further facilities, the AutoClerk file maintenance and reporting package and the toindex database and inquiry package, are priced at £1,000 and 500 respectively.
Of the 50 MicroCobol sales so far, about half have been made

directly by CAP and the rest by the licensed distributors. However, with further licensing agreements being signed at around one per week, this sector should rapidly overtake.

seen as 'black hole'

A GRAPHIC description of very large scale integration by silicon

He therefore felt by the control of the contr He therefore feit it inevitable evices as a technological that a true silicon systems "black hole" with an ever expanding event horizon was logy at some level of VLSI given this week at the Motorola capability. Slicroforum by Colin Crook, managing director of Rank Pre-CRT division sale

Giving the keynots address es silicon technology continued to
shooth more and more of the
system to be a silicon technology continued to cathode ray tubes for the company's video terminals, the systems business with time. Every year, significant portions of the sub-system, and ukimately system, and Electrical Industries. Though no event horizon and fall irreversibly onto the silicon," he said.

Electrical Industries, In

YLSI silicon devices

With the advent of 1 million and 10 million translator chips, slicon achieved control Then. silicon achieved control. "Then together -tney are expension is whether the UK sets involved with silicon pro-

He went on to reitarate the CMC for Mond point made in Philadelphia by TO prepare data for its commer-Gordon Moore of Intel (CW); February 22) that the CW; February 22) that the major problem was defining what actually to make with the tech-

dict the likely socio-economic changes over the next decade development plan into effect.

strategies at the University of

Problems of policing society

Japanese aim at

ead in decade

THE problems of policing society in the 1990s will be made more difficult by the opend at which technological change is outstripping people's shillty to edapt to the new circumstences.

Speaking at a meeting of their police in theore and local authority representatives lest week, Arthur Burrows, director of the Police Scientific Development Granch at the Home Office, based this prediction on the premise and question: "As all

this prediction on the president and described in a day will evantually be met by only 10% of the potential workforce, what will the other 90% be doing?"

However, technology itself sould provide much of the enewer to this problem said Burrows. "In the

1990s, all the davices required by the police could

be made avellable."

HAVING just about caught up

with the US on computer tech-nology by taking Honeywell

licences and by copying iBM,

the Japanese are planning to

streak ahead when the fifth

generation of mainframea

MITI, the Japanese Ministry

arrives at the end of the 1980s.

of International Trade ond In

dustry, has formed a Fifth

Generation Computer Survey

and Research Committee which

will lay plans for the generation

of computers to follow IBM's

The committee is sitting under

the chairmanship of Prof Tatsii

Motookn at the University nf

Tokyn, and has already decided

that for Jupan, very large-scale

integrated circuitry is in, hut

Josephson Junctions, the super-

cooled logic circuits about

which IBM has released consid-

erable research material, are

Also out is Von Neumann

architecture, the architecture

which is the basis of almost all

today's computers. Pattern

recognition and imitation of the

operation of the human brain

The idea is to break away from

the traditional approach of de-

signing the hardware and than

mapping the software onto it;

instend the committee wants to

design the software and general

system operation, and then try

Prof Toshiyosu Kunli, also of

Tokyo University, is the ori-

and fit a hordware design to it.

will be closely studied.

Speeking at a meeting of chief police officers

and is presently in the US of computers which are needed In the 1990s. studying future computer The committee is due to report in March 1981, ofter Texas and with the National which an eight-year concerted Aeronautics and Space Admin-

which will determine the kinds

One device that could see e far quicker applica-tion in palica investigative work is e micro-based Photo-Fit system (CW, November 30, 1979) which

rnoto-rit system (CW, November 30, 1979) which uses computer-eided dosign techniques to construct and modify the fectal characteristics of suspects based on information from witnesses.

Software for the system has been completed by the Computer Aided Design centre in Cambridge in

sity's psychology department.
"We are now working on the system so that it will be completely portable and therefore enable police officers to use it in the home of a witness."

The present idee is that it will plug into any domes-tic television much like a TV game and the screen

will provide the display.

tion with sovice from Aberdoen Univer-

national effort involving all the surviving manufacturers and The committee is also to prepublic sector bodies will put the

Keeping tabs on calls THE field trials of ACRE, the writing function of the Post Office's new Automatic telephone operators, required to

Microprocessors could soon help telephone operators to put through cells, if triels at Eastbourne of the equipment shown here proves successful. One of the features of the new switchboard used is an electronic display which destile the new triels are set to be a set to

COMPUTER WEEKLY, June 7, 1979

pounds, according to spokes-The system, which so far hos

Cail Recording Equipment.

which started last weekend

(CW, May 31), could ultimately

save the corporation millions of

log the details of calls needed for billing, with n micro-based magnetic storage system.

The system has a built-in clock for timing calls.

Six Eastbourne exchanges taken four years and £2 million serving 60,000 customers are into develop, replaces the ticket- volved in the trials.

Let our training take the strain...

If you want the best out of your people, someone has to put the best in - and do it in a way that enthuses, not confuses.

That takes experience. People experience, hardware experience, professional training experience. Datasolve's comprehensive training courses are based on more experience of ICL 2900 VME/B and IBM/MVS systems and hardware than probably anyone else has ever accumulated.

BOC Datasolve balances practical and theoretical training. We take trainees to full competence and convert seasoned staff to new environments - in operations, software, systems analysis, programming and APL

The people problems you have today we've been solving highly successfully for years. Which adds up to a great start if you train with Datasolve - or a lot of old ground to re-tread if you don't.

To find out where we're at in your field of training, tick the boxes and post the coupon to: Mike Gough

Sales Manager, BOC Datasolve Education 9 Rochester Row, London SW11LA. Telephone: 01-828 8104.



		,		
			-	, marrie 1 4
	Send me	more info	rmation or	the foll
	A		·	5 . 4 .
		2900 Basic	:Operation	าร
0.0	- CL	2900 Adv	anced Ope	rations
	i iCL	2900 COE	OL Conve	rsion
		2900 COF	OL Progra	ımmine
		ems cours	62	Marie 19 Marie 19
	∴ □ APL	courses	j = j $j = j$.	
6	☐ IBM	MVS Basic	Operation	ns
	□ IBM	MVS Adv	anced Ope	rations
	□ IBM			
		Utilities		ر در این است. مغیروند در این
12. 12. 13. 14. 15. 15. 15. 15. 15. 15. 15. 15. 15. 15				A 10 15 1

n the following training programmes: Company Address

Complete Education Schedule

together they are expected to

sion of ICI has ordered two CMC Sovereign key-to-disc systems for installation at its Northwich, begins to warp the very pature of the market and end tiser, he said "At this level of Integral of Inte

the themes of our "1984" column; we are continually coming across touching examples in the local Press of how nrdinary people view computers. It is seldnm one finds a plece sn elegant, so nll-embracing, so satisfying, as this letter frnm the Laneashire Evening Telegraph.

I was interested in the feature on "Tomorrow's World" showing how lettuce was grown by computer.

Could we not therefore have a computer for humans telling us everything about our bodics, the blood, urine, and acupuneture meridians.

The energy given off by caeh organ in our body has a certnin gyration and oscillatling in health and any deficiency would show up telling us what disease each organ may be suffering from.

Each disease within our

gyration and oscillation, and we could tell immediately which germ may be presen within our body which could save a lot of lab tests.

l am sure someone in Blackbum builda computers, and all doctora, deniists, acupuncturists, etc should get together with their knowledge. It takes all kinds of incdical knowledge to get the full range of require-

The air in Blockbum ahops and operating theatres could be tested continually, which would reveal any dangerous chemicals or garms.

People may not think it necessory to have these computers in big stores or doctors' surgeries, but just think what n help it would be to the NHS nnd to every person. I think every person ahould know more about their body.

The computer could give a written report for people to

OUR REPUTATION IS

FOUNDED ON FAILURE.

thing became abnormal.

A lot of lives could be saved and what could be testad at death or in the grave is beyond our imagination. The going on in the grava or at cremation should be tested then perhaps we would see the church's teaching brought to life and the doubts about death gone for ever.

We only need to think of what the computer revealed in the ahroud of Jasus and the Mey (millions of electric volts - energy) with which He rose from the human body in

Our wavelengths are atill connected to our loved onea and we CAN connect up to them after death, and I am sure the computer could do

What about it Blackburn? It is a money-making product and the more made for stores, doctora' surgerlea, etc the cheaper it will be.



The gentle art of **Basic fluttering**

computer program for football pools forecasting. This was the third I had written, but the first that worked well. Now I have turned my hand to horse-rocing programs for the computer, and have already written four in

The fundamental Idea is that gambling programs have at least something in common, and this Is their concern with uncertainty. This in turn suggests prubability and statistical There are at least twn jobs to be done, firstly to collect and

sort the vast amount of ilata available nn horse rucing all over the world. This data then requires trealment by the standard methods of statistical unalysis, such as standard error ond the mean, difference be tween meuns, correlations, chisquared, analysis of variance. factor analysis and so on in a whole mass of variations.

The second job is nelually to forecast the result of horse races | local written for each mit. in the light of the rolles of two in Algol and twa in he

change he made in the syste An example would be the possibility (In the light of act inil accomulating evidence that in rule 5, the upper lies should be 10-1 against rate than 12-1.

This allows the computer to

inform the user of a charge?

probability which necessitate

A second example might is volve the separating of winder from each way bets by dividing maint li above into lvo group Winners should be the first two of Si's and WARs and each m lads should be inthe first found SI's and WARs. The possibility ut "line tuning" the me adaptively is evidence.

Two pringrams haves\

Why leave the choice of ehirt-beerer to the tipetent the back of your daily nowspinpor? Prof Frank George hea deviced ways of making the formbook yield in eccreta in Bnaic and Algul.

in the light of the selected data. Let me indicute the sort of hynothesis we are checking out by these means. The following ls a typical examate. We eliminate from consideration: (1) All horses for which we have an data, e.g. have never ran-

uninterruptible power supply system for today's sophisticated

DP and process installations. Read the facts for yourself. Send today for Chloride

parts. That makes the system much The upper increasions IIPS output power to unaffected by a making tallure.

Chloride Transipack Limited, Napier Road, Bromley, Kent BR2 91A, England

Transipack's latest detailed literature. PROGRESS IS STATIC.

Chloride Transipack. The CHLORIDE

Mains power failure, fluctuations, spikes and transient

vollages. Because it's only in those situations, when your

reliable static inverter technology come into their own.

Transipack UPS systems

ensure that not only is your

but with power of consistent

equipment supplied with power.

quality. They reduce malfunctions,

loss of information and costly down-

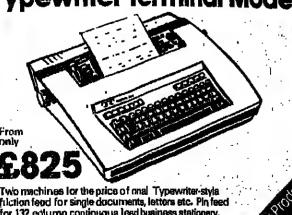
static inverters involve no moving

time. And remember, Transipack

hardware and peripherals are at risk, that Chloride Transipack

uninterruptible power supply (UPS) systems and their hyper-

Teletype 43 Super Deal - New Products + Special Prices Typewriter Terminal Model Pin Feed Model Portable Model



Two machines for the price of anal Typewriter style fulction feed for single documents, letters etc. Pin feed for 132 column continuous leed business stationary. Many electric typowriter leatures. 9-wire matrix head for exceptional print quality.

PERÎPHERAL HARDWARE LIMITED Aprilickî Cîose, West Molerey

riction Feed Model £818

Pedestal Ireland 01-941 4:006 Wetherby 61885 Dubin 971854

£870

Options

£ Sign

Form Feed

Automatic New Line

Auxillary Port

IEEE 488 Interfa

ESC'Code guppression

(WARs); (7) The going (state of the ground) must be right for the We are not presenting an exhaustive list, but only the huik of the core factors, Furthermore, tha factors can

oe treated in two different ways. The first is the use of yes/no questions and suggests decision tables, and the more recent form of dacision tables called Testroog programa.

ieost 4-1 aguinst and nn innrc

thon 12-1 ogninst; (6) Tho horses

involved should be in the first

three in the speed figures (SFs)

and also in what are culled

ndjusted rutings

The sacond way is to use waightings which ara in e numarical scale. This last method can aiso be used with a

calculator.

The great advantage of the offared.

Computer in this field lias not only in processing speed for the forecasting; but aven more in the statistical analysis which is a necessary! pracursor to the application of the various coefficient of the forecasting systems and per haps just as vital, the updating of the records in a database future?

hypotheses we have constructed and all have been operated ICt. 1903A. Versions have also

been ruit an minicomputer The following example of Basic program shows the task Involved for the numerical weighting of the horses is which, for simplicity, we sha only 4, with the improbe before; (2) All lurses that have numes of trees - OAK, AS, FLM and BEECH. There has gone up one class (or especially mure than one closs) for the first of numerical characterists time; (3) All horses that have attached in each, represent the hoen placed neither in their last our list 1-7 abova, and set our list 1-7 abova, and set our list 1-7 abova. two ruces nor in 50% uf their more hostdes.

We can then add up races; (4) If you are hetting to number characteristics for ea win, the horsu must bu in the lurse und list the totals have. first three in the betting and the liere is the semple.

19 DIM X (4,18),8141

20 REM SYSTEMS LOOP:

30 FOR A = 1 TO 4 odds must not be less than 6-4 aguinst; (5) if you are intting each way, the horse must be nt

40 PRINT "ENTER NUMER CHARACTERISTICS" 50 REM LOOP 60 FOR E = 1 TO 16 80 NEXT E 90 NEXT A. 100 FOR A=1 TO.4

110 LET S[A] = 0 120 FOR E=1 TO 15 130 S(A) = S(A) + X(A, E) 140 NEXT E 150 NEXT A. 180 PRINT DAX S[2]; "ELM"; S[3]; S[4]

170 END When all listed for any one until an hour oris race, check the could not do t overweight carrier

Row brewing over Mirror technology

king satisfactorily within three

explained that after the acquisi-

tion of Telex in 1978, the com-

pany needed substantial

regrouping, and the move will

oring together all the company's

system Ramis II that runs on the National

CSS 3200 has been developed by Mathe-

matica Products Group. Called Ramis 1200,

It runs under the NCSS operating system

The software will be marketed in con-

and a little point with the limit

THE new headquarters of Memorex UK was formally opened in

Stalnes last week at a ceremony which was attended by local

BITTER rows are in danger of and incorrect operation. Mirror staff had not been adequately blowing up between Linotype troined, he said. "Our equipment Paul and its customers in several works," he asserted. "We have tries as difficulties persist over 200 installations." with the operation of computer-A joint working party has been set up by the Mirror and Linutype to try to find solutions. driven newspaper page makeup systems, auch as that at the ally Mirror (CW, May 31).

The Linotype spokeaman ex-Firms in other countries are pressed confidence that the page reported to be unhappy with makeup system would be worheir Pageview systems, ond are blaming Linotype Paul's soft-Tape is cut at Memorex HO

Recently, Percy Roberts, chief executive of Mirror Group Newspapers, announced the group was giving up attempts to assemble pages on acreens and was reverting to manual pasteup of photocomposer output, pending resolution of difficulties that were causing "serious de-

Mirror ataff feel that while the equipment can produce simple, 'slabby" pages it ia inadequate to handle the Mirror's elaborate eye-catching layout. The machinery takes a very long time to produce such output, but the human operation is also

There are also functional flaws, they claim. For instance, the storage screens can only display six different type founts, and these have to be used to represent all the other printing founts that are used for headlines. It sometimes happens that o finished page can look perfectly

all right on the screen but when produced on paper, lines of type are found to be overlapping. A Linotype spokesmnn claimed however that both the hardware and the software were perfectly odequate, and the problems were caused by the paper's management policies

dignitaries and businessmen. Memorex House, in Church Straet, Staines, includes a large warehouse for imports. Managing director of Memorex UK, Mike Kitching. would be the "nerve centre of all Memorex UK operations." Memorex has branch offices In Bradford, Edinburgh, London,

Manchester and Nuneaton.

Linotype to come up with

answers, and partly been trying

to improve matters by on-the-

Being at the "point of need"

they have in some ways found

this easier to do than Linotype

would have, but they cannot

deviate too far from the basic

software for fear that the next

spot modifications to software.

APT language

functions, including sales, repairs, training and administra-A SUBSET of the numerical control language APT has been tion, so that Memorex House mplemented for the GEC 4000 series. Called APT 4000, the Scicon's SW office software was developed jointly by the Rugby computer centre of GEC Machines and NEL at SCICON has opened offices in Weymouth at 43 St Mary's Street, to handle business in the East Kilbride and is now being South West, especially local used for production work at Mathematica, NCSS deal to market Ramis on 3200

Honeywell names new support boss

HONEYWELL Information 9ystems has oppointed Kevin Kennedy a director of the customer nedy e director of the customer services division. He will report to Brien Lang, whe le meneging director of Honeywell information Systems end will heve ovarall responsibility for the compeny's flaid engincering and support activities.

Kennedy joined Heneywell in 1964, and since then has held the pesitions of fleid engineering branch menagar and

gineering branch menagar en northern ragional marketin eupport menager. In 1975 he wee eppeinted the first meneger of the Honeywell brench which serves the Littlewoods organ

Meet recently he wee ner-thern regional director of the data processing division. He will be besed in 9rentford.

junction with the "super minicomputer" by

both NCSS and Mathematica, under an

agreement permitting each company to sell

As Ramis II has been widely installed by

service companies and bureaux, one obvious

market for the system will be service com-

BCS issues guidelines for teaching schools DP

N an effort to alleviate the fail- output; automatic control of syllabuses to keep pace with changing technology, a working party of the BCS Schools Committee has produced a pamphlet for teachers listing the basic topics that it feels should be incorporated as a priority in all school curricula.

The working party was concerned, according to chairman David Tinsley who is computing inspector for Birmingham schools, that teachers now with their limited experienca were not equipping their pupils prop-erly to deal with the very different technological world of the 1980s. Thus the topics chosan were funamental ones, by and large independent of technical

Among the topics listed are: the concept of input-process-

processes; the use of software packages; information storage and retrieval; the cashless society; computers and people; communications systems; and, computers in the economy.

Also mentioned is "Computer manipulation of text, number. picture, and spoken word". This deals with teletext and viewdata, office systems, and CAD. Artificial intelligence is also listed as a topic, as is the effect of computers on employment.

Tinsley emphasises that the working party is not laying down a syllabus; it is up to the Ingenuity of teachers to decide how to incorporate the suggestions into their own courses. It is felt though that every student should be exposed to the topics, whether in computing courses or as part of other subjects.

West Centre Hotel is venue for viewdata exhibition

DESIGNED to attract potential viewdata users and information providers at a time when mass production of viawdata televisions is properly under way, and Prestel is in full service, the Professional Viewdata Exhibition is planned for November.

Sponsored by Vlewdata & TV User, a sister magazine to Computer Weekly, the exhibition is supported by Avip, the Associa-

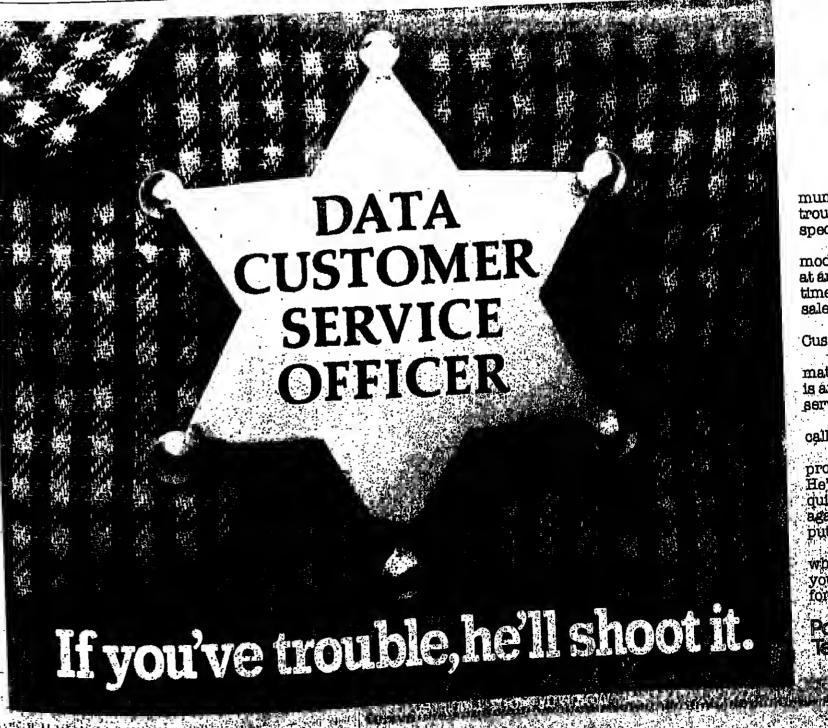
tifies an in-house machine.

one or more satellite minicomputers.

tion of Viewdata Information Providers os well as the Post Office, the Central Office of Information and the Department of Industry. It is to be held at the West Centre Hotel, London, on November 7 and 8.

Exhibita will include editing equipment, private viewdata and teletext systems, mierocomputers for running telesoftware and a variety of user terminols. Peripherals are expected to include printers, hulk storage devices such as cossette ecorders and floppy disc drives, keyhoards and graphies design

Inquiries are invited from The software could also prove attractive potential exhibitors by the orfor distributed processing applications, perganisers, Illife Promotions, Dormitting Ramis II applications to be offset House, Stumford St. London, loaded without change from a mainframe to SEI 9LU. Tel: 01-261 8865.



Each Post Office Telecommunications Area Office now has a troubleshooter to deal with any special problems you may have.

Because, with over 100,000 modems in use and demand growing at around 20% a year, we felt it was time we strengthened our aftersales service.

So we've introduced the Data Customer Service Officer.

He's there to co-ordinate matters when things go wrong and is an entirely new part of our service:

For purely technical hitches, call our service engineers as usual. But, if you've any other

problems, our DCSO's your man. He'll get to the root of the matter quickly and get the wheels turning gain calling in anyone needed to put things right. So, if you've any problem

which calls for a rapid answer, call your local area office and ask for him

Post Office Telecommunications

The general public knows caught had valid check digits, the concept well as it is used in but were incorrect account postal addresses. Using my own address as an example, my postal code is 1410 and the name of my community is Kolbotn Kolbatn is a checkvoid for the code 1410.

When writing n bank cheque we write the amount with numbers, for example "1,000" and then we protect the eheque against accidental or de- has been important, I have deilberate error hy writing a checkword (no pun intended) "One thousand."

The name "checkword" is intended to force a mantal comparison with the wellknawn check digit method. Both methods will detect the same group of accidental (keying and handwriting ar datu-transfer) errors. Depending on how independently of the identifier you gather the

identifier is "valid," but that it actually refers to the real world object which the user intended account number errors we aumbera, Many of these could probably have been caught by

means of a checkword. The only clear advantage of check digit methods is that the checking process can be car-ried out offline to any sort of file. It is a pure and simple knowing immediately is criti-cal, then we should probably numerical consistency check. In cases where this advantage go online with the data capture process. Otherwise, it is better signed a combined check digit and checkword identifier. The o discover that you have an laput identifier error late, becheck digit method captures fore you update a file, than not some errors early, such as keying miatakea. Then tha at all or after you have updated checkword method is also used A checkword does not have to give us assurance that we to be a long word. I frequently have indeed identified the prouse two characters, oftan about four characters and

Disk packs from Control Dataset.

Because you can't choose better than

the world's biggest brand.

The Control Detelebel on a disk pack reflects its meker's system/drive/head/msdle total technology capability.

Control Deta is the world's lergest supplier of scientific end engin earing computer systems. The leeding supplier of OEM periphersis,

perticulerly of disk drives. The biggest manufecturer of disk pecks end cartridges. With large-scale U.K. manufecturing fecilities, for full quality

control and maximum evellebility.
For exclusive supplies of CDC end ICL label megnetic medie

contact Control Dateset. You'll gein the services of Britein's

You cen't choose more wisely then the biggest names in disk packs and certridges, from the U.K. Industry's lergest

most extensive end experienced seles and technical

Call Control Deteset on 0436 3322, today.

eupport force.

duet, cuslomer or account which was originally intended. lmagine for a moment that ali telephone numbers hnd a check digit which was verified would still dial a lot of wrong telephone numbers, and need to verify the correctness of them by asking for the name o the person (the checkword) we

rarely more. The more you do

use, the greater the error de-

tection and error correction

power you have. In extreme

so that it is unique. This rarely wanted to speak to. costs more than 4 to 6 cha-The primary requirement for checking a checkword is that racters. But evan with total we have a file (table or datafailure or destruction of the main identifier, it gives 100% probability of fully automatic base will do gulte nicely too) so that we can match the Input correction to the intended checkword to the corresponidentifier. The unique checkding file checkword. In batch word is simply used as the processing applications, this means that we don't know search key. about some errors until well after the data has been manually keyed in. Now if

In some cases a checkword is purely numerie. In specific inatances I have usad the price of a product; the birth date of a bank account holder; or the telephone number of medical doctors, as cheekwords, One highly technical view of a checkword is that it is a case

of "distinct repetition." i'd better hasten to define the terma. Repetition la serial (but not necessarily continuoua) repeating of a term, such as is customary with the numbers In a telegram. For example, using my telephone number "80 16 97 801697". if a single digit is incorrect or digita are tranaposed, then I can detect

the checkword cases we design tha checkword this by comparison. In the example, I consciously introduced one type of distinctness by using spacing between digit pnirs in one number but not in The other. The telegram latraduces a kind of distinctness by repeating numbers at the hot-

Advantages of

tom of the telegrum. For even stranger protection against "parroting" crrors, we can introduce even more distinctness into the design. For example "80 16 97 GILB". In this case multiple parroted errors (70 16 97 701607) are almost certain to be detected (60 /6 97 G/LB) as nre most other common errors (80% of errors are single-digit unes in

some investigations).
In addition, there is more Information to develop a cor-rection hypothesis; often one which can be developed and teated automatically, But. frequently, one is developed which can be evaluated with a little human heip, by selecting from a short-list of possibil-



The checkword method has a number of advantages which space thes not permit me to explore here. It is easy to add on to existing systems. It is highly applicable to almost all identifler design situations But we have described it the roughly in a chapter of our Humanised Input book (Gib)

Weinherg, Prentice-Hall).
I hope the reader of this cotumn has been provoked 10 review the theory of checkwords, and to try out their application in practice. If you think it won't work, or won't improve your applications, then I suggest that you have NOT understood the method Try again!

PROGRAMMER NOTES

How many of your applications are really necessary?

IS the much-discussed shortage preg, and the need to shim of DP staft genuine ar is it a by-product of excessive - and unnecessary - camputerisation? This is the question raised by a reoder from Coventry, who appears to think that many DI' applications are redundant.

The mythleni man on the top of the Chiphani Omalhus could, after perusing the back end of Computer Weekly, reasonably declines that the supply of pro-grammers was fulling fur short of deniand.

"But perhapa we should examine whether the demand is greoter than it need be. Ilistorieolly, many users installed eomputers because Fred down the ruad had onc. When the beast arrived, a decision had to be made about what to use it for.

'I knawl Let's put the payroll on it' must have been n commun answar. Thia upplicotion was usually followed by stock caurol, production cuntrol, general edger, atc.
"This generated the nacd for

bigger ayatems which, in turn, generated a naed for detabases and other softwara tools to make tha bigger systams more managaable — and for the programmers to maintain tham. "I don't doubt that some programmers are needed for

maintaining existing systems. many programmers and DPMs can put their hands on their hearts and say: "These new applications ere vital to the pro-fitebillty of the company"? Not many, I fear.

"Computer software seems to foilow Parkinson's Second Law, in that income rises to meat axpenditure. In the DP context, output of software rises to meet the capacity of new herdware. "Many DP departments would be more efficient if they bought

most of their software off tha

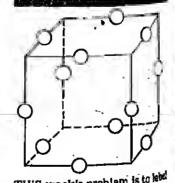
ntight lead to an examinate the real need for the application.

"All this leads me to believe that there is no shortage of pogrammers, but too many listallations runding too mony applications which have little or no

"Perhans the Industry doesn't want to discuss this Issue?"

Programmer Notes is a forum for the discussion of both technical and non-technical matters related to programming. If you are me applications or systems programmer and have views on this issue or any other aspect of Programming, please write to Programmer Notes, Computer Weekly, Dorset House, Stamford Street, London, SEI 9LU.





THIS week's problem is to kee each edge of this cube with a different number from I to It. euch a way that (e) the sum of tha three edges meeting 6; 200 vertex ie a constant X, and (b) the aum of the four edges round

each face is a constant y
each face is a constant y
The first question is to ded
which of the thirteen numbers is
not to be used. See page 32 for adjution.

30 ST. JOHN'S ROAD TUNGRIDGE WELLS (9892) 39591,

DIGITAL MICROSYSTEMS DSC-2
LOW GOST COMPUTER SYSTEM INCORPORATES:

ONE MEGASYTE of Sopry ties alongs on two single stood 8" drives — standard:

I. 65 SYTES Of Main Memory sundard — 32% and 48% sign available.

O'M DISK OS standard a TEXT PROCESSING BASIC COBOL FOR IRAN available. FERANDASI 2 — Adden Hard Cress from — Up to 28 Megabyras py prive . MODATA ARE LOOKING FOR DEALERS & CHRYSHIEUTOAS

SOFTWARE FILE

Matching the structures

ONE interesting point made at the meeting related to the mensgement of 2800 communications. The facilities, it was noted, are closely integrated with VME/8 as a whole. It would therefore be a microke to create a teem solely devoted to communications services.

Instance, the management and support structure should match the structure of the product.

Mark II was still in the distance.

Telecommunications, he said,

an edge in software, it would

new terminal types.
"There is a lot of interaction

between the different parts of

the package, which can lead to

interference. If you succeed in

attaching a new terminal, it's

quite likely to bring down one of

Further emphasising the lack

would

of resilience, the lass of a line for

very linril to trace where the

Although recovery time was

in part determined by the thor-

spent on diagnosis, a recovery

thur even as good as 20 mlautes took a lot of work to achieve.

Combined with a mean time

between any system failure of around eight hours, the best

online availability that could be

illegunte far mony commercini

This, though, was perfectly

hoped for was about 00%.

the existing ones."

urrir occurred."

whatever reason

Scope for tuning VME/B is significant

cumpared it, VME/B offers considerable scope for tuning. Ian Battersby, of W. H. Smith, emphasised that major savings could be made in resource use by both TP and MAC with relatively little effort.

"It's very casy to generate a 11/4 Megabyte

application using TP Option. The extravagance, though, is superficial as it's fairly easy to reduce a typical application to between about 500K and 700K.

cation supporting around 30 terminals takes around 2%-3% of the OCP power of a 2970.

"By far the greatest share of this—around 50% to 60%—is consumed in file

PETER HEWITT REPORTS ON THE 2900 CLUB

"Although it depends on the transaction rate, we find that a fairly average TP application code. There is thus lots of scope for

tuaing at the system level." Battersby also noted that it had been possible to halve the response time on one application by reconsidering the object program collection strutegy. "MAC is also amenable to

handling and block and record 1/O, with less

tuning, particularly by adjusting the main store quota. This is a trade-off of virtual starage overhead against size, making it relatively struightforward to seve significant percentages of W. H. Snilth, he noted, ren

with a MAC concurrency af between 10 and 16 for program development during the day and had settled an a quotn of 144K. This took around 3.5% of the OCP power of a 2970 per session.

"These problems can be over-His general conclusion was come, though, with user system that the sophisticated scheduling algorithms in VME/B "In general, I can't describe unde it perfectly possible to run a mixture of batch, RJE, TP and 2900 communications as excellent," he concluded, "but for our MAC services quite adequate for purposes, they are adequate." most commercial users.

Praise for TP Option ICL's telecoms not extended offerings still pose to MAC and RJE problems for users VME/B's TP Option was alone singled out for praise by lan view of other people's work and can both see ond interfere with Baltershy in an illuminating other jobs, creating a security

AS usual last week's meeting of disappointment that Komanfy the 2900 Club was both entertaining and informative. It aildressed itself to "Communica- was the key to the future use of tions Excellence?", concluding the 2900 series both by bureaux that ICL's standard offerings in and by large organisations this field still posed problems for generally. Unless the 2900 had

In some areas, it was argued, YME/B communications facilities were incomplete; where they did exist, they suffered from unreliability and were in the main adequate ruther than

One of the key continuing problems is the VME/B line handling software Kommfy, which ICL confirmed it was rewriting at a 2900 Club meeting early last year (Suftware File, February 16, 1978).

Describing telecommunicalons as the "greatest heartsche" of the large 2900 systems, Roger Wallhouse of BOt! Datasolve said that it was a great

> requently leave it unusable until VME/B was re-fnatled. "A major problem with the communications system as n whole is that diagnosis is remarkahiy difficult. The chances of getting any diagnos-tic out of the system are very remote if it goes dawn, and it's

FINANCIAL MODELLING FOR DEC PDP11 USERS

Your PDP11 can alo made more the general eccounting work

FINAR adds a gineristent equilibity to your menagement information would have men conventioned mades for all kinds of physical budgets, forecasts, cash three, project evaluation, consoliribitions, etc.

the Financial Analysis and Reporting Language 2 Rys Crescent, Orplington, Ker 01-407 1144

RESOLVE"

applications, including those heing run nt W. H. Smith. Later in the ofternuon, n call for users to work more sym-

identify three areas in VME/B and the communication subsystem that should be The first, he said, was the addition of a personal computing

remedying software deficiencles

proinpicd Roger Wollhouse to

lose out to IBM mainframes hecause of the wide availability of facility. There appeared to be no IBM-targeted application softplans for such a facility and its umission was a fundamental The subject of Kommily was weakness seriously limiting the also raised by Ian Battershy, of W. Fl. Smith, It was, he said, "old usefulness of the 2900 to large organisations. and very fragile" and was one of Users should also press for the man obstacles to attacking

inprovements in IDMS, TP and multi-access. They had here, he noted, more chance of success with ICL than with other major maintrame manufacturers such

Finally, there was scope for joint ventures to develop appli-cation software and utilities. Far applications such as aecounting and management information systems, there should be considerable scope for meeting common requirements with a pack-

As evidence of the potential market for utilities, he already knew of more than une puckage under development for tape Ilhrary management.

Interested parties

UNLIKE the official ICL user association, memberahlp of the 2000 Club is not restricted to thuse who already own o muchine or have one on order. According to a recent membership survey, only 53% are existing 2900 users with a further 35% baing prospective users. Topics of chief concern to iliera include parformance (61%) and ICL policy (66%) according to the aurvey.

could at best be described as Although W. H. Smith had so far used TP Option only for file inquiry applications, it had found in the software all the essential facilities needed to write cammercial TP programs. Further, all the facilities needed

eview of the three main VME/B

Both its facilities and its

communications subsystems in

usability were good, he said, whereas those of MAC and RJE

ise at W. H. Smith's.

ad worked. "Programming the applica-tions was straightforward and the Cohol interface was simple, though nat standard. The puckage provides a good hatchoriented testing envelope, enabling one to drive a stream of test ransactions through the system

before going to online testing." Comprehensive facilities were also available to the system programmer in such areas as resource utilisation and response time tuning, and file Integrity and security.
Buth MAC and RJE, on the

other hand, provided little more than a busic window into batch facilities and their usability suffered as a result.

"MAC, for example, provides the sume editor as in batch, and so makes no use of tha full capabilities of the screen. Similarly, the diagnostles are batch-oriented and eonsequently ill adapted to seraen working, in particular by being too verbose.

Tha terminal facilities worked well, he said, with ICL equip mont and were well integroted with the System Command Language. However, it was a "long uphill alog" with other devices except in the case of taletype-compatible equipment.
"The usability of RJE is

primitive, as it gives the operator poor viability on to his own job. Oddly, ha haa a much better

Build a better understanding with the users of microelectronics

MCROSYSTEMS'80

Wembley Conference Centre, January 30 to February 1,1980

Microeyatems is e conference and exhibition which elerts industrieliste end busineasmen to the neture of this Second Industriel Revolution, and bridgea the gap between the microelectronics expert end the engineers, ecentiets, systems designars, educationalists end othera who uee his akill end products. It ie an open door to better business for auppliers of both hardwere and softwere - microproceaeors, memorlea, interfaces, peripherals... in its third year, it moves from a hotel show to the more apacious Wembley Conference Centre, with some 1,400M2 of exhibition

TO TAKE PART IN MICROSYSTEMS '80. CONTACT LLOYD COLLINS OF "COMPUTER WEEKLY" ON 01-261 8743 or 8022 OR WRITE TO HIM AT ROOM 13, DORSET HOUSE, STAMFORD STREET, LONDON, SEI 9LU.

spece.

Unlock Your Operating System. To free your system from enqueue conflicts, missing I/O's, bottlenecks

or dozens of other malfunctions that ensleve your CPU. you need RESOLVE, the online, realtime problem solver. Your key to a better operating system from

The European Software Company
Kingswick House, Sunninghill Berkshire SL3 7 BJ. Tel. 0990-234.91

More than a Computer Company

ititel problems, former TOPS really pleased to have got the hotel for two weeks - that wea is now settled ond getting on

at the Sevenoaks site of Jermyn progress in the industry. Industries, having been forced to leave the Banker Automated Clearing Services Edgware Installntion hecause he was unable days o week, with some overto find accommodation in the time at weekends. North Lundon area (Oji Spot, May 24). "There's a nice, family-like

Satisfied customer

PETER Aken, a scnior operator at the Burton-nu-Trent site of Pirelli, contacted me to discuss the IBM OS pseudo-writer - o facility which, effectively, cnuses the system to erase unwanted output.

So I sent him a copy of an Op Spot piece on the subject (CW, July 13, 1976) and was pleased to than me was sent on it instead learn that he had few problems in adding the writer to his sys-

He told inc, "With the help of our software programmers, i was able to add the writer to our system in less thau a dny. I learnt a lot doing it, too.

"It saves us on useful lot of stationery and the junior operators are particulorly pleased with it because they have less work to do on the printers."

Remember. we welcome comments

OPERATORS often complain that nobody listens to their point of view. Well, Op Spot is lis-tening and Bemard Allen would like to hear from you.

Your letters should be sent to

Op Spot, Computer Weekly, Dorset House, Stamford Street, London SEI 9LU. Bernerd can also be contacted directly on 01-261 8035.



Our business is your IBM Hardware Lease · Sale · Purchase PREMIER COMPUTERS 3 UNION COURC, RICHMOND SURREY CW91AA, ENGLAND (el Ol 940 1134 (elex 926734

job, particularly after the problema I had in London," said well in the computer industry. Steve, who met me in London He is employed as an operator the other week to discuss his

> The junior partner of a twoman team, he works an elglit-They operate a Univac 90/30,

running under the OS3 operating system which, according to Steve, "calls for o minimum of Intervention on the part

So for ell of his training hos been hands-on, under the super-vision of the shift leader. Snid Steve, "The operations manoger leaves most of the training of staff to the shift

leaders. So far I have picked up quite o blt about the system's job control lenguege. "When I first joined the company I was down to go on a JCL course but one of the lads who has been at the site o bit longer

Still, I hope to go on the course some time in the future." Steve wes, in fact, sent on a course during his short stey at BACS in Edgware. He con-

"I went on an ICL 1900 course

SOME time ago I reported Ber-

clays Bank International's plana

to help staff overcome the loss of

ellowance in the event of

moving from ahift work (Op

On thot occasion, I mentioned

Spot, March 22).

Implement a scheme Intended

The BACS instellation, with its three ICL 2950s, two ICL 1904S systems, and eight-men shift teams, provides an interesting contrast with his present

"I liked it et BACS and would heve stayed there if I had been eble to find a place to stay in the North London aree. But, in a wey, I'm gled I moved because the Jermyn site la run on more informel lines. "For e start, I am now a part of

a small team, and thet means seeing jobs through from start to finiah, which gives me a considerable amount of job satis-"And at BACS we had to weer

bit more informally. I prefer But his working environment will change a bit very soon, beceuse expension plans are in

hand at Jermyn Industries. Said Steve, "We're getting a Univec 90/40 installed some time during September, and to liouse it the company hea built a computer room which is about two and half times es big as our present one."

The compeny is elso to provide a reat-room for the operafor beginners, held at ICL tora. He continued: "We're Letchworth, and I quite enjoyed pleased about that. We olready

tors to make routina edjust-

Thus Gerry Mills, menaging

director of Milla Aasociates, e

group of computer buraaux,

esponda to aome commenta

about those printers from David

Millar, a shift leader at the

imparlai Group in Bristol (Op

"You repeated a popular

nisconception amongst opera-

tors concerning the print quelity

evallable from the ICL 1933

aoon as the operator comes off

ahift — but said that none were

hearing about proposela of rance, writes, "As far as I can doubt if any of us would be able

"THE common reason for poor print quality with ICL 1933 thrues, "My company both

printers ia fallure by the opera- maintains end uses mony line

which involves phasing out tha eble to phase out our allowance

ellowance over a nine-month should we get transferred off

period, rather than atopping it as shift - and over a full three

In reaponae, Brian Rosa, an £1,000 per year from shifts, ond if

operator with Prudentiel Asau-

we have elwaye beeo to mova."

ops' fault, says bureau director

Spot, May 10).

Phasing out of shift allowances

ever put into practice.



have a microwave oven but thet seems to spoll the taate of the food. We're hoping to get a

In line with the machine upgrede, the operators are to move on to a twelve-hour shift system, providing eround-theclock cover, aeven daya a week.

"The system we're going over e sult on the dey and evening shifts, wherees now I can dress a eerliea and four on nights, with four days off in between," he Asked for his reflections on

the TOPS operations course at Borehamwood College, Steve replied, "It's been of real value to me, it really has. For example, i learnt about the hexadecimal numbering ayatem which I have to uae to make system diagnostics when a system halt occurs.

"i've got one complaint, though - all the pubs around the Borehemwood aree seem to have Ind Coope bitter, whereas Whitbread is my favourite," he Poor printing with ICL 1933s is

printers of this type, some of

which are over ten years old."

the ICL 1933 "precludea" high

print quality, but points out that

reasonable print quality" can

be mointained without too much

attention from engineers, pro

vided that the printer barrols

"If a DP manager must hove

reasonable print quolity from hia

ICL 1933 and la prepared to pay

for it, we know that it can he

years, not just nine months.

"With our 20% allowance

most of us are getting over

requantly replaced

nammer trays nre

He concedes that the dealgn of

Using the IBM OS operator commands—Cancel

IN nast On Spots I have given an averview of the IBM tis operating system and discussed certain parts of it -- the reader, writer and initiator procedures

- in greater detail. And starting this week, I m tend to give further attention to the OS aperator commands, some of which can be used in a number of ways. Although the adiscussions are intended primanly fur persons with little or no IBM OS experience, I would welcome comments from operations staff familiar with the sys-

The CANCEL command. By means of this comminned, the operatur can abort n job at any stage of its processing. The word "cancel" mny be abbreviated by the letter "C" and the command has the following format:

C XXJOBi

When the ubove command is entered by the operator, the system will lnok tu see if jeb XXJOBI is actually in store and if it is, will abort it.

For the system to produce a dump along with the job control iauguage listing of XXJOBI, the operator must tag the word "dump" on to the end of the

C XXJOBI, DUMP

If the uperator has to cancet it ot input stoge from, for exemple,

C XXJOBI,IN=A

To cancel it from output quene "A", he enters t XXJGBI,UUT=A

It is also possible to carela job which is actually in the po-cess of holing printed. To do the the operator specifies the ad-dress of the printer being assi or the identifier of the wile. For example: System procedures, that is

readers, writers and lultistors can also be cancelled by the operator, but only when they are at the initiation, or starting,

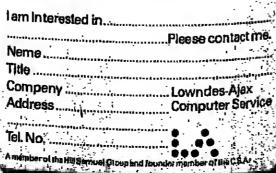
This facility proved to be atremely useful on one occasion at a site where I was once employed as an operator. One of the staff had tried to start a writer to a printer which had already been allocated as bailcopy log to the TP network which ran throughout the day.

The writer become stuck to the system, with the results that several members of the technicad support team were called to the computer room. They were alread to craicel the TP network. an action which would have cansed the users considerable inconvenience, when one of the iquitators suggested cancelling the writer and thereby saved the

This is Lowndes-Ajax

- 370/158 Attached Processor • 370/155 - both with MVS/TSO
- 3850 Mass Storage
- 3705 SNA Support
- Back-up Facilities
- Warrington Multiplexor
- Data 100 and TI Terminals
- Computer Output Microfiche
- Card Punching
- System 2000 Database
- Simplan Corporate Modelling
- General Ledger
- Accounts Receivable/Payable
- Fixed Asset Accounting Payroll Service
- Personnel Information
- Direct Mail

For further informetion on the renge of responsive computing services offered by Lowndes-Ajax, please contact: Micheel Reeve, Associete Director - Seles, at Lowndes-Alex Computer Service Limited, Millon House, Milton Roed, Croydon CR9 2XG. Telephone: 01-689 2244



TIM PALMER REVIEWS RECENT DEVELOPMENTS AT ICL

X25 software with new VME/B

HEADING the list of new suftware with the now ICL mechines is the 5X36 relense of VME/B, available for Spring 1980 jostallation.

It includes an X25 Implementation for attachment to Euronet, Trenspsc in France and the forthcoming UK Packet Switched Service, and ICL claims that it provides an efficient combination of batch, MAC multiple access for program development, teleproces-sing, end RJE.

The new TPMS trensaction

processing enhancement is 5x36, and new features to aid enhance error recovery ere included to the new release.

runs VME/B, previously only available on a large 2960 and above. The 2958/10 needs a hunt and ICL says It has been introwant to begin distributing cen-trally developed applications appropriate MVS.

consists entirely of new proces-

sors; the neighbal 20170 processor

was pensioned off last your, and

the 2980 and old 2960 are only

being built for users wanting to

add another processur to an

The 2982 ranges in price from

£1.25 million for an Order Cade

Processor, one SAC store access

communications controller, one

SMAC store multiple access

of memory, to £1.75 million for u

similar configuration with 16

cheaper than thut offered by

1BM on the 3030 series; ICL is

charging £60,000 for two

Megabytes, whereus IHM's US price for 3030 memury is \$70,000

per Megabytc. The SAC, SMAC and store is

2972, 2976 and 2082, and coch

machine is available with one or

two OCPs, SACs and SMACs. A

ingle processor 2982 matches

the 3032, end a dual processor

metches a uniprocessor 3033.

SOME loteresting figures sug-gesting that a 2872 could be

comperable with an Amdahi

470 V/g were presented by

Roger Wallhouse, of BOC Data-solve, io the course of a discus-sion on the 2900 as a bureau machine at the ICL 2900 club meeting last week.

la currently running not only à 2872 and 470V/g but also a 370/

iCL's memury is netually

existing cunfiguration.

2982 double price/

performance claimed

WITH the new additions and the 2980, a key feature of its nounced over the past two design being un integral 16K-

weeks, the ICL 2000 line now layer eache memory which is in

controller, and four Megabytes College, London in December.

easier to use then the full veravailable on all but the 2950/10, the importance of VME/K is somewhat diminished, VME/K is currently running at obout 20 ICL sites. The 2956/10 elso runs DME/ George 3, DME/2, DME/3 and

However, now that VME/B is IDMS-E, which is cheaper and

VME/K; people wanting to use DME/System 4 have to go to the When originally announced,

the smallest 2960 cost £520,000, and it would have cost neorer £I million to run VME/B, so the allable under both 5X32 and cntry price for the large-scale operating system has been security of RJE systems and to reduced dromatically; the conccpt of distributing centrally developed applications around The 2956/10 becomes a linch-pin of the product linc, since it uf IBM with the 4331 und 4341; however, VME/B is ICL's answer tu MVS, and IBM of present has nothing comparable 1% Megabytes tu run VME/B, with the 2958/10 on which to run MVS; the neorest thing would be duced principally for people who a 1711/148, which adequately

legrated into the processor con-

tignous to the arithmetic unit to

avoid contention for the cache

1CL is also promoting the

nower of the Distributed Array

Processor, DAP, when compled

to the 2982; the combination

idlovs a system with up to 40

Megalotes of mala memory to

he assembled. The first DAP is

set for delivery to threen Mary

The next processor down le

that used in the 2972 and 2976;

the former is now affered with

up to 12 Megalytes and the het-

ter with 10.

from input-output requests.

be sold back to Cullinane, the IDMS, for wider marketing. iCL is striving for a common

sion end is aimed at 290X users who have hitherto regarded databases as outside their orbit. includes a cut-down version of the Data Dictionary System, which was hitherto only offered on the lerger machines, end is, says ICL, a product which could riginators and licensors of

system auperstructure ecrosa VME/B. VME/K and the various DMEa, and has meda e atert with Range Cobol, beaed on the VME/B Cobol compiler. Other Range compllers are coming end the company is also trying to increase commonality in teleprocessing menagement ayatems and file structures and

UK business in first half at highest level ever

PARTICULARLY atrong bualness in the UK was a feature of ICL's first helf, in which the compeny returned pre-tax-profits of £IB.8 million on turnover of £285.1 million (CW, May 31).

The company says orders in hand are the highest ever, end believes that both government apending cuts and the deterio-reting business climate will lead to increased demand for computers; one-third of its UK buainess la with public sector organlaations, taking in netionel end local government and 100%

ICL has been trying to get research and development expenditure down to the Industry average of 7% to 8% of turnover. and it is in reach of its target, Implying an R&D investment this year of about £55 million. On the vital services front, the

the group's software company, Dataakil, has doubled its business over two years. company now has 400 full-time Chairmen Tom Hudaon Is lecturers and is bullding a strong hopeful that the company will training presence in continental achleve a foothold in the US Europe, with centres in Parls,

om Hurson - Hopes for Pos

The Hague end Frankfurt, while

with its new 9500 point of aak terminale, but ragards the present meintenence egreement with TRW as unaatisfactory in that the US company le a com-petitor in the point of sale mar-

Loss-making last year, the US aubaidiary is closer to profitablilty and should break even in the last month of the year; the Utica. New York factory is a vitel ICL outpost, now contributing 15% of the hardware menufactured by iCL.

The Inflation element in ICL's figures is put at no more than 3% half-year on half-year, which meens that the company has a real growth rate of over 20%, well in excess of that of the industry as e whole. On the halfyear figures, Grahem Meek. electronics companies analyst el stockbrokera Wood Mackenzie looks for a profit of £46.5 million on turnover of £630 million on the full year at the end of Sep-



If you're an OEM, you siready know what Control Data has done for disk technology. Now we're determined to earn the same reputation for excellence in band printer technology. By giving you versatility and maintalnability. By giving your customer reliability, superior print quality and economical

Engineered for component commonality

All three members of our 9380 family of band printers look

Put quality behind your nameplate 01-930 7344. Or return coupon to:

More than a computer company



TRANSDATA KNOWABOUT ACCUSTIC MODELS
OTALS MAN Trained in Management and Design
User of Street Colors No. 1 and 1 a

307 ANSWER AND ORIGINATE

307A ORIGINATE ONLY

The 307 is for use where displace served as allower mode is required. Also, available, is the sheaper 307A which wome in originate mode only. Solin have displact insulates control and solid state little to provide shealthy and large service lite. White allowing service lite.

A company of the company and the standard and the standards

against a coat of £0.9 million. Cost is divided by MIPS to give

According to thase prica/ partormance figures, the V/g and 2972 compete closely for the distinction of "best buy", being rated at 7.79 and 0.43 reapectively. By contrast, it rates a 2970 at 12.73 and the 158 MP at a BOC Datasolve le in the rare position of being able to com-pare the performance of a variety of large mainframes, as it

disappointing 32.05.
A 3032 it rates et 19.00 while a 3031 comes in at about the same

a currently running not only a 1872 and 470V/g but also a 370/ 158 MP.

The following formula was devised to provide the comparison figures. The power of a machine in mips millient fit structions per second, is messived against the cost in nounds. Thus the 2872 delivers 140 mins could well vary a lot.

Dataskil rates 2972 close to 470 V/6

> pretty much alike, Inside and outside. So your servicing, training and inventory requirements are simplified. Yet you can choose from three print speeds, 69 print bands and lots of other options.

Bulk with the features and economy to altract end-users
Our 360/720 jom models offer a compressed pitch option.
That saves your eustomer modey in paper expense. And gives him the capability to brint 132 columns on standard 8½ by 11 buth paper. Rands switch in seconds. Paper loading is 11 buth paper. Rands switch in seconds. Paper loading is easier. Operator controls and adjust ments are minimal. And easier Operator will like the clean, or ap impressions delivered by our proven instructor entirely.

Colin Keighley, OEM Seles Menager, Control Data Limited. 22e St. James's Square, London S. W. I. Please send literature and sample printouts on your GÐ

PEOPLE AND EVENTS

Geest reorganises top management

GEEST Chinputer Services has announced several organisational changes, which include the creation of a management board and two divisions boards.

The managemeet board will direct ine managemeet bosrd will direct policy, planning and financial matters and Dr Colin Cooke will be a member, continuing in his role as enn-executive chairman. Clifford Viviao, who is chief executive of the parent company, the Genet Cooke parent company, the Geest Organ-isation, will participate as vice-chairmen of Geest Computer Ser-

Philip Walewright will continue as maeaging director with executive responsibility for the everall monagement and co-ordination of Geest Coniputer Services. Graham Gough becomes development direc-

The two divisional boards will

Girl Technician of the Year

TO focus attestion on electrical and electrosic seglesering as a werthwhile caroar for women, the Caroline Healett Mamorial Truet end the IEETE will be offering prize money of £250 to the wineer of their competities to find the 'Giri Techniciae Esginaer of the Year.

The wiener will be an eut-atending tachelcies, choses for hevieg successfully undertaken the eccassary tachelcal educa-tion and having proved hersalf espable of holding a responsible toh

It is hoped that the compatithe hope that the compatition will encourage other woman to join the profession. The closing data for nominations is Saptamber 18, and details are nucleois from Elleen Chaldon of the IEETE, on 01-830 3357.

Stavely Ferguson, a former sysionis analysi with British Airways, has joined Systomsolve (Computer nas joined Systemsolve (Computer Services) as a senior analyst pro-grammer, end Simoe McNell, pre-viously with the British Library, has become junior analyst and programmer. Willism Leach, who was previously with Legal and General. hss been appointed an enalyst/ programmer with Systemspive.

report directly to the management board, and will each be responsible for operational control and cofor operational control and coordination of their respective divisions. Philip Wainwright will be
managing director of the bureau
division board, and Derek Bilby, who
is managing director of Cambridge
Computer Services, Les O'Reilly,
director of Eastern Computer Services and Denia Churchill, unanaging
director of Midlands Computar Centre, will siso assist on tha board.
A new data products division will
be formed under Graham Gougb as
managing director. and Philip
Wainwright will also be a member of
this board. The division will be made
up of the existing Geest Minicomputer Systems, and s new division,

puter Systems, and s new division, Geest Microsystams.

Geest is aiming st two major mar-kal segmenta in the new operation: ms jor users who wish to enhance the responsiveness of their existing meinframe operations, and small users who need local intelligence to utilise s comprehensive range of

ian Hiller-Brook has joined the financial systems division of Gamma Associates. He was until recently merket development manager for the insurance industry with Digital Equipment, working at the com-pany's headquarters in the US.

Paul Williams has been appointed as division director of personnel resources for NCR. His previous position with the company was iniustrial relations manager

Ted Litton has been appointed as menoging director of Rochford-Thompson prior to the opening of the company's new factory complex iii Hambridge Lane, Reading, Litton is a foreier financiol cuntroller and company secretary of Tibett and

Allen Brain has joined Tsudem Computers as a sales executive with responsibility for finance and bonking. He was formerly a sales manager with Prime.

Karl Nightingala, a former mar-keting advisor for the industrial pro-ducta section of the Irish Export Board, has been appointed marksting manager for Mohawk Europa, based in Limerick, Ireland.

ADDS THE



A lower ecoldent rate thee the estional everage within the computer industry her were se industriel Sefety Award for Data Recording lestrument Company. The ewards ere presented annually by the British Safety Cauacil, and this is the fifth coescutive year that DRI has won the award. year that DRI has won the award, which entitles the company to fly the British Couecil flag over its premices for a year.

The presentation ceremony took piece at Grosvesor House Hotel, is Park Lens. Guest of henour wee James Prier MP, Secretary of Btete for Employment. Our picture shows Alan Brebleer, eafety and security officer of Date Recording end hie wife Elele, recalving tha eward from Jemse Tye, who is director gearel of the British Safety Couecil.

David Griffitha has been appointed product sales manager for liquid crystal displays with Hamlin. He joined the company as luternal technical sales engineer in 1977.

Paul Fockens has been chosen to head Modcomp in the Netherlands. He has worked in the computer in dustry since 1966, in Europe and In

CW soccer results

Divisioe 2 SBS 2, Comshera 5

Division 3 Computer Weekly 5, 3M 2 Computer Weekly 3, CJ6 1 Sharwood 4, UCSL 0

UCSL 2, Computer Wookly 3 CJB 3, 3M 1

Division 4 CDC 1, Forest 5 Hoekyns 2, Wallorax 11 Jadpu '6' 2, Allen 2 Dividoe 5 Vantak 2. Kingaton 3 NCR t, Gritish Aatospace 4 Barrow 0. Gitl & Dullus 3

Does your current system

Mike Payne, Marketing Manager BTI Computer Systems (UK) Ltd. Brunel Way, SLO UOH, Berks, SLI IXN Tel. Standard Standard (Manager)

supplier offer you:

30% discount on two or more systems?

Free programme development time on one of the

A system expandable from 3040 264 megabytes,

Multi-terminal facilities capable of handling up to

A system with 60 megabytes of disk storage for less

If he doesn't, then you should be

talking to us because we do.

32 users simultaneously?

• Full 24-hour manufacturer maintenance—nationwide?

JUNE II

Finding finance for the small bisiness. CAET. Truty Lane Hotel, Drity Lane, London WC1. JUNE 11-13 JUNE 11-13
Technical study in logal information relateval in Europe — symposium on results of the study. European Connell of Europe, Publis d'Europe, Avonce de l'Europe, Strasbourg, France.

Piessey

PLESSEY Telecommunications has

appointed a new director, Air Mar-

shortly to change its name to Physicy

Telecommunications and Office Systems. Sir Herhert has held several

senint positions and was director of engineering at the Ministry of He fence from 1987-89.

el Sir Harbert Durkle, to its board.

JUNE 14 Strictmed Programming, North Just London Polytechnic, Borking, London, Delais 01-559 5141, ext 49. Simplicity and approximation in sequential pattern identification. II. Gaines, Daford University, Kebia Road, Oxford, 16.00.

JUNE 18
World fortility survey: tuchnical pro-bloms of internotional research, and Atim. Study group on computers in survey analysis. London School of Hygione and Tropicsi Medicina. Kapper Street, London WC1, 17.30.

JUNE 19-21 IMMM '79 Extibblion and conference.
London Chamber of Commorce, Ganavo.
Contact Citff Land, London Chamber of
Commerce, 01-248 4444.

Commerce, 01-248 4444.
JUNE 20
Who will use the general purpose computer? tOPM. Pearl and Dean Studto.
Broadwick House, Broadwick Straat.
London WI. 18.00.
New approaches to systems onelyste and design. H. Gearing, E. Mumford, 2CS.
(83.30.

Distributed processing. North East London Polytachnic, Sarking. Ostalia 0t-599 5t41 ast 49.

JUNE 21
Pattern recognition and flesible automation. J. Weaver. Oxford University. Nuclear Physics lecture theatrs, Rebie Read, Oxford. 18.39. JUNE 20-22

FICS-9, the ninth annual international conference on fault-tolerant computing. IEEE Computer Society. Medison, Wisconsin. Contact IEEE Computer Society, 5855 Naptes Plaza, Suite 301, Long Beach, CA 90803.

Changes at Fluke

FLUKE International has changed te tame of his Trendar division, and in the DK this group will be known as the Fluke Automated Systems

Newly appointed to this division is Vie Collins, who will provide to him cal support for the full range of Goddard Dave Goddard has bee board lest equipment. He recently joined the company from Marra-European service manager for Vepower where he was UK sales and Lincolorum engineering operation farmighton Europe including the tight the way formerly OK service marketing manuger for Zileg micro computers and support loards The address of the Automated Systems Group is at the company's

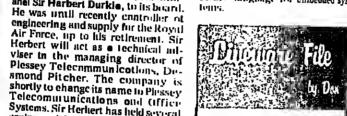
Gruenic Low has been appoint new premises at Culonial Way. UK sales manager for the sales and marketing organisation of Beckmin Instruments. He was formerly ale engineer with the company.

By Judith Morris

Fellowship

John Barnes, who is director of linguage research at SPL Internatinual's research centre, has been appointed an industrial fellow of Wolfsrui College, Oxford. This will the with the programming research group which is led by Professor C.A. R. Theore.

Barnes is a member of the team which recently designed Ada, the future language for embedded sys-



CUTS IN NEB INVESTMENT. CUTS IN TRAINING PLANS



CUTS IN TAXES. BUT CHTS IN



.. LIFE UNDER THE



... IS DEATH BY A 型型



THE Mighty new Burroughs Scientific Processor, which runs as a back end to the large-scale 87800 mainframe, hos found favour with the big Jopanese Information Processing Services bureau in Tokyo. JIPS is to pay million for a BSP with B7800. for installation in 12 months'

The BSP conaists of on arroy of 16 arithmetic processors which operate concurrently on related data elements. The principle is similar to that used in ICL's Distributed Array Prncessor, DAP, but there are many rprocessors in the BSP, and each is much more powerful than those in the DAP.

Undating

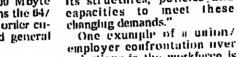
OVER 30 UK building societies are installing ITT 3330 Data-printers at their head offices to improve communications with, and processing abilities from, computer bureau Centre-File. The new printers replace poper tape equipment and hondle the updating of customer files held oo Centre-File's IBM 3033 and 3032 systems in London.

Replacement

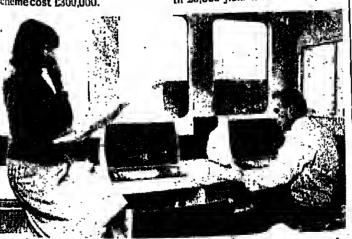
A NEED for better computing resources and future systems flexibility has resulted in Firth Brown Tools, a manufacturer of engineers' cutting tools, replacing its Honeywell 2040 with a Honeywell Level 64/20 machine. It has been installed ut the company's Sheffield headquarters and features 312K main memory and three 100 Mbyle dist drives. Applications the 64/ 26 will handle include order cutry, stock control and general

Traffic scheme

A TRAFFIC scheme, sponsored by the Depurtment of Transport and Devon County Council, has begue operating in Turkny. where 27 sets of troffic lights and 22 pelican crossings are now controlled by n Plessey Coordinator system hirused at Paignton pulice stating. The scheme cost £300.000.



puter company. The European Metalworkers Federation, which represents seven million workers in 14 European countries, has criticised the Philips Group for its "entbacks" of 24,000 workers over the last six years and claimed that an internal study suggests that further cuts of up tu 20,000 jnbs would take place



Mohawk Data Sciences 21/40 system while it is being used by Termac Mohawk Data Sciences 21/40 system while it is being used by Termac National Construction is an £18 million contract to provide foundations for extensions to the Drae power statice in Yerkshire. It will be used for on-sits engineering egiculatices end communicate with a central computer of Termac's Wolvernemptoe office. A further 10 systems — seven MDS 21/40s and three 21/50s — have also been ordered for other Terman sites. A CONSTRUCTION site cabin hee become the temporary ho

HEWS IN BRIEF Unions stress role of training in expansion

> So in a bid to arrest what it taken by the government if the t K Is to become nne of the new sees as n threatening and aerious technology "whiners" of the situation, EMF offiliated unions, including the Association of This was just one of the points Scientific, Technical and Managerial Staffs and AUEW/ ditions." made by TUC leader Len Murrny

at a conference on employment

The initial anti-technology

thrust from wary unions has

now been converted into a spote

nf studies that seek to assess

how new technology, and more

specifically, microelectronics,

will affect their membera and

which we foresee is not going to

take place on the employera'

terms alone, as happened in the

first Industrial revolution," said

Murray, who accepts the thesis

that our society is already in the

shadow of the second industrial

changes must be wrought "on the basis of consent (of the

workers and unions) to

maximise the benefits and

minimise the costs, and to en-

sure that the benefits are equit-

ably shared in both national and

will nut be enough, lowever,

and this is a great challenge to

the trade union movement

which must, as the TUC Interim

Report on Employment and

Technology concludes, "develop

its structures, policles and

One exumple of a union/

employer confrontation over

reductions in the workforce is

that related to Philips Industries,

the consumer applicace to cam-

Government netlon by itself

international terms."

changling demands."

Instead, Murray states that all

The accelerated change

organisational structure.

nulogy" is mentioned.

and technology held in London last week, which typifies the kind of stirring that is now being seen in the majority of

trade uninns when "new tech

ASTMS and secretary of the stressed that everything is being Philips Industries Joint Council, "and these are security of employment; a reduction in working time; and improvements in general working con-

ment in Elndhoven, Nether- 1991 was a 'worst case' report

done to follow through with the agreed negotiating procedurea In an attempt to correct this. In reaponse to the EMF critic-

lsm, a Philips spokeaman aaid: We have no plans at present to Tass, have launched a campaign to make the Philips workforce of intention by Philips manage-Citing the apparent reversal make any more cuts. The pre-

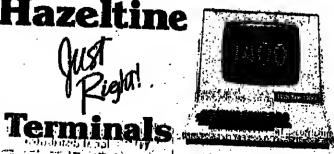
Tandem into Europe

FOR a new company, Tander naa done an exceptionally large proportion of its business in Europe, and has consequently decided to manufocture locally

for the European market. The plant is to be in Neufahrn, just north of Munich, and production is due to begin in September. The German market, where Tandem opened for bualness in Europe, has brought 27 installations comprising 76 processors; in the rest of Europe, 14 systems with 24 processors have been sold. Tandem's NonStop 16 system is sold with a minimum of two processors.











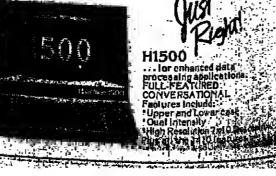
disk storage?



Tel: Slough 10753) 70044 170547 / 70548
COMPUTER SYSTEMS (UK) LTD

















digital

NAME

ADDRESS

.....

Ray Terminals, 32 Neat Sueet, London WC2H 995 Tel No 01 836 4663 Teles 2984

Rapid Racall Ltd

RAPID RECALL SID

MILLS INCUSTRIAL PARK, WOOBURN GREEN Telephone Source End 062 95: 24961 VAT Registration No. 234 4162 08

6 Soho Milla Induatrial Park

Tal: Bourne End (062 65) 24961

Woobum Graan, Bucka

VAT Reg No. 234 4102 08

5th JULY

Rapid Recall

I pm interested in model(s) I 400 L

1410 🗆 1500 🗆 1510 🖒 1520 🗇

Please send literature [.]

Paymants must accompany all ordars for tickets. This slip will be returned to you with your ticket(s) as your tex invoice for VAT purposes.

Hazeline Hazeline Terminal House, 14 Pelarsham Road;
Richmond Survey Two Basis and Revision Road;
Richmond Survey R

Weathermen's sale boosts Cray profit

Cray I for the European Centre tor Medliim Range Weather Forecasting, at Shinfleld Park, near Reading, Berks (CW, April 7. 1977), was the major factor in the \$2,862,000 profit ahown by Cray Research in the first of Defence for the Atomic quarter of this year. In the same period last year the company ment at Aldermaston, Berks had a loss of \$211,000.

Weapons Reaearch Eatablish (CW, April 20, 1978). Estimated John Railwagen, prealdent of to cost about £6 million, the sys-Cray, said the company dld not expect "this extreme high level in March and development work

Postcode in every home blished in 1976 (CW, November 11, 1978). It was for the Met men that it was installed at Ruther-

COMPLETION of the Post of its postcode. Office's £50 million mechanisation programme for the postal services is now scheduled for the Hewlett-Packard minls. end of 1982. Vitally dependent on universal use of postcodes, the systems will have n boost small telephone exchange has over the conting 12 months, with every home getting a reminder UK network nt Warrington.

The mechanised letter offices

use a system designed pround A Pentex export version of the standard TXE 2 reed relay been installed by the PO in the

the Rutherford Laboratory, Is being expanded.

The 500K machine has now been moved to the Science Reaearch Council'a Daresbury Laboratory where It is being used to provide computing power to about 20 groups of researchers working on various projects (CW, May 10).

This same machine was also used by the ECMWF when that that it was inatalled at Rutherford, where there was a spare computer hall, so that work could start on the weather pro-

The ECMWF is now in Ita permanent home at Shinfield Park, and its Cray, front-ended by a CDC Cyber 175, Is due to go into full operation next month.



wards Heath, In a £23,000 order.

are installed in 11 of the 18 UK

branch offices. They link to the

mills via an existing ITT tain

series ADX message switch

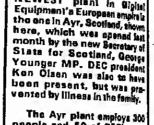
already in use in the company's

The VDU assists data entry by

leased line telex network.

using telex-compatible Vitel VDUs (above) to transmit the details from sales forms to telex machines at its mills, while the printed form itself is stored ocally on transparencles. The two are married up on receipt by overlaying the transparency on the telex printout and photoco-

displaying prompts for each enpying. The Vitel VDUs supplied by try in the correct position on the screen, und messages can he ATS Communications, of Hay-



edited before being sent.

How to close the 'Software Gap'

Many businessmen have been disappointed by the information they receive for strategic decision-making. It is often too little, too late and too expensive.

Filling the gap between the ever-changing needs of the user and what computer systems provide is really the key problem—a problem we at Cincom have done something about.

Cincom's family of information systems software closes the gap.

First, give the end-user access. Cincom's new T-ASK is an on-line interactive query facility for end users. Ad hoc and repetitive questions that once required special programming now no longer do.

T-ASK is a "user-friendly" system. With easy to use commands, the user gains access to the data he needs through his own terminal.

He has the data he needs, when he needs it and without additional drain on the data processing department.

· 我们一种人一种人工工工具的原则是一个人的人的工具的工具的工具的工具 Cincom Systems Int., S.A., Dept. CY, St. Ives House, Maidenhead, Berkshire SL6 (QS, England, Cincom Systems Int., S.A., Dept. CWe, 17-19 rue Mont

A "user-friendly" system demands the most

Direct end-user interaction creates increased demands on the data base. As a result, Cincom has developed TOTAL 8.0.

You've heard of TOTAL. Well, TOTAL 8.0 is even better.

TOTAL 8.0 provides superior performance.
It is fully multi-task, multi-thread, offers VSAM support, reduced CPU usage, and many other

Where products and services come together. In addition to T-ASK and TOTAL 8.0, Cincom Systems offers a full range of data base and data communications products that help close the software gap.

We also feature specialised application systems software and Custom Systems support.

These products and services are backed-up-by a complete network of technical product support, system engineering and educational facilities.

You don't need to live with the "Software Gap," just call on Cincom to close it.

NameCompany		
Position		
Address		
Equipment Operating System	Telephone	
Cincom Systems Int.; S.A., (Berkshire SL6 103, England		aldenhead.
	com5y	2

novel 10:00 Brussels Belgium: Offices also to: Batel, Copenhagen, Oberardel Cermany, Oslin Paris, Scottlein.

New firms that combine skills predicted by NS

MICRO NEWS

Infotech conference on

Microelectronics and Data Pro-

cessing - the Next Five Years,

held in London. It was an occn-

sion on which he once again

expounded his views on the

lock to future developments in

micro-based systems currently

out up by software, a view he

National Computing Con-

ference in Anaheim.

ment manufacturer.

eading the way.

orcibly expressed at last year's

The two existing sectors in the

NEWEST plant in digital semiconductor manufacturer with the capabilities of the systems house is the way to inture success in applying microelectronics, according to Bnb Helkes, International vicepresident of National Semicon-He was speaking at the recent

The Ayr plant employs 300 paople and 50 of BEC's own minicomputers on final assembly and test of models in the PDP-11 line from the 11/04 to the 11/70.

A NEW type of company that both, and in any proportion it combines the skills of the sees fit, he stated. "It can most creasing labour costs." rapidly idapt to the enomious needed even to handle the force for change that is con-Immediately foreseeable generation of chips. Yet none is tinually presented by the exponentially cannbility of silicon techniin sight," he said. As an aside, he threw in the

The next question he addressed was which of the two "pure" operating areas would produce companies that were the most successful. Perhaps unsurprisingly, he came down on the side of the semiconductor

company integrating upwards.
This was justified, he said, by the economies of semiconductor manufacture. A minimum wafer fabrication plant costs \$20 million to put up, and must produce about \$30 million output per year to be economic. In addition, this would only be running a single process.

Industry that he outlined are the this product is prepure semiconductor house, now dominantly for internal conmoving rapidly towards the sumption by the systems house, production of VLSI devices, and he suggested that only comthe pure systems or end equippanies worth \$2 hillion and over, solely in electronics, could To this he added the new third component, the Verticully Inteeffectively make the move.

A semiconductor company or grated Systems-on-silicon the other hand has easier pro-House, or Vish, a combination blems to face, Heikes claimed that National among other For a start, the grawing device complexity is leading many semiconductor manufacturers is rapidly moving into, it is also an semiconductor manufacturers area strongly addressed by a close to the systems area growing number of systems already, so the addition of sult-able marketing skills for a full nanufacturers, with IBM systems enterprise is for ensier It is this combination that to nequire, for much of h is leikes feels will prove to be the

already available in-house. nost successful in the market-The major problem area he sees for semiconductor com-He took as n starting point in his lecture the fact that the panies is that of forming o semiconductor industry will aldy soon be able to parchase in olume devices with one million

active elements at a cust of tens "As time goes on," he said, "It pecomes mare difficult to diferentiate the communent from the system. The system becomes

oftware level, or both,"

strong software development group to support the systems And software of course, as Helkes hus sald before, is the big stanhling block to he overcome.

Though the cost per function of semiconductur devices is ful ling nipidly, the east per line of apiece of silican in a box with its dehugged code is staying at least accompanying software. It can be differentiated at silieon or creasing slightly, he said.

"This comoa about because The advantage that a Vish the intelligence per line of code company has is the ability to do is not increasing rapidly onough

Users to get fruits of Apple's software labours

ued by the company, together to label high res with a manual providing deoperating instructions for each

of the programa carried.
The majority of the programs carried in the new volumes have been provided by users of Apple II computers, and include File

TLT MICRO SYSTEMS

now, offaring a \$100 Micro. or under £1,000 complata eady to run, capable of aupporting over 1 megabyta ol on board RAM storaga: II you would like our rap to call on you in the London area

Ring 01-882 6481 Ext. C.30 TLT MICRO SYSTEMS UK LTD

VOLUMES three, four and five Cabinet, a personal directory of the Apple Computers Soft- and record keeping system; ware Bank have now been Character Generator, a program images; and Integer Baalc tailed descriptions and Renumber/Append. In total, there are 25 user supplied software packages.

Also included in the new issue are two games from Apple. One, Microchass, is available under licence from the Personal Software Company, while the other, Apple Bowl, creates a simulation of ten-pin bowling.

The manual that accompanias the threa new volumes is called the 'Bonus Issue'. It carries axtensive documentation on the new programs, and is partly in-tended to help establish good programming techniques

programming among users.

The user contributed programs from the software bank should be available from most Apple dealers, with users supplying their lower blank diskettes or cassettes for copying the programs. grams Amenon high

Two micron geometries claimed

chloved in a standard 8-bit mioroprocessor by NEC-Toshiba information Systems in

Japan.
In foct, anginours at the company have been involved in producing a shrunk varsion of the device from its standard 4 micron geometries down to 2.5 microns. This involves photogrephically reducing the mack ast used to monufacture the isvice, and is a common tech nique in the industry.

suggestion that the present

logic statements currently used

In the generation of software is

the wrong way to go. "Certainly,

the brain does not function that

The subject of an niternative

was however ducked as "the

subject of another lecture, per-

hops in another lifetime."

way," he said.

ones, zeros, and sequences o

that it uses the instruc teef produces the 8089A com-marciolly, it is quits possibly this micro on which the work

HE magic figure of under 2 pleron geometries in semicon-luctor manufacture has been

nique in the industry.
In carrying out this work,
however, internel channel
lengths in the micro have been
reduced to 1.5 micron.
Though the company has
declined to state which microprocessor has been shrunk in
this way, it has indicated dreases to be referenced with symbolic names and makes it easier to modify programs. It also allows similar sections of source code to be written only

The Improved Link package speeds the combination of code written in any of the languages avallable on the Intellec system, including the Assembler, PLM/ 80 and Fortran /80.

The speed improvements have Uxbridge.

object code modules.

Performance of three Intel packages doubled THE performance of three soft-ware products used in deve-loping 8080/8085 microcom-convert relocatable object

puter programs has been doubled by iniel. modules to an obsolute memory formot for execution in the They are Version 3.0 of the 8080/8085 Macro Assembler and the Link and Locate packages of the Isis-II disc operating

Scope of Diy system used on the company's intellec Development System. show extended The new Macro Assembler allows program assembly in half the time formerly required by

REFLECTING the shift in translating assembly language microcomputer thinking and potential, the Do It Yourself mnemonica into relocatable Computer Show has been extended beyond the hobbyist to This allows program adaddress the use of microcomputers by businessmen of al.

To be held at the Bloomsbury Centre Hotel in London, from July 5 to 7, It will combine an exhibition of relevant systems with a serics of seminnrs covering both business and personol use. Further information can be obtained from Online Conferences, Cleveland Rond

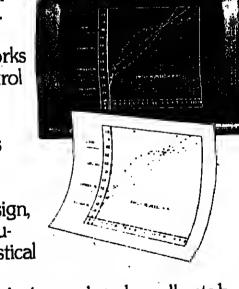
NOW! The power to handle complex computing problems under your own control.

Whatever your discipline, there's a faster, simpler, more rational way to handle computing problems.

A Hewlett-Packard desk-top computer

It is easy-to-use, flexible and responsive. It works in your department, on your desk, under your control and does not demand specialist programmers or systems analysts.

Yet an astonishingly wide range of problems yield to its power. Including applications in areas which you might think would demand a large computer complex, for example: Engineering Design, Instrument Control, Business Management, Manufacturing and Numerical Control, Complete Statistical



Analysis and Medicine. There are four models which are already well established in the field, solving all kinds of problems in science, engineering and business. Each system is modular with a wide range of peripherals ensuring that you pay for just what you need but can expand at will. For more details return the coupon.

To: Hewlett-Packard Ltd. King Street Lane. Winnersh. Wokingham, Berks, RGD 5AR. Please send me details on Hewlett Packard desix top omputers. My particular area of application is

Winderen Workingham Barks HG 1 BAR Tel Workingham 784774. the first transfer of the first property of the state of

THE REAL PROPERTY OF THE PROPE



FOR USED DP EQUIPMENT

NEW DE LUXE 80 COLUMN

HAND PUNCHES (EX-STOCK)

BUY OR SELL THROUGH

* OPERATORS *

* PROGRAMMERS *

* PUNCH OPERATORS *

LEADING SUPPLIERS OF

CONTRACT OPERATIONS

PERSONNEL THROUGHOUT

EUROPE

SAVE TIME AND

MONEY

CALL US FIRST

LONDON

01-439 755/1

MANCHESTER

061-833 9355/7

STREETLO

ANALYSTS /

(W) DV P

(**W**) **D**) P

WEBSTER D/P SERVICES LTD.

65 WIGMORE ROAD, BROMLE KENT BRI 3AA



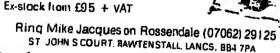
Nelson Computer Services Ltd

Suppliers of new end refurbished

BURSTERS, DECOLLATORS, ETC. OISC, TAPE, CARD STORAGE DATA PREPARATION EQUIPMENT SPECIALIST IN IBM AND UNIVAC

BUY — SELL — LEASE — RENT Univec 1710 VIP interpicting punch verifier IBM 029 A-22 printing card punch IBM 059 card verilier

OPC mini Bustor Wilkos mini defenver PFE 2 pail decollator lock bindois and cabinets 10. 12, 15, 32 onil 56 tray cord cabinets 80 COLUMN HAND PUNCH



BRAND NEW SERIES I MUST BE SOLD

£ NO REASONABLE OFFER REFUSED

Processor_

4855 Model EOO 192 K

t discs, diskette, printer, console floeting pt., teletyprinter, edaptore end controllers, etc., etc.

DAVID J. HUTCHINSON on 01-499 4501

or writs to HUTCHINSON SCOGGINS ASSOCIATES LTD. 47/48 New Bond Street, London W1Y 9HA

WANTED We wilf purchase all used

Phone us: J&M COMPUTERS (0621) 892333

FOR SALE

Microster 45 with 64K byte and 1.2 megsbyte Leer Siegler VDU Teletypa 43 £5,500+VAT

Tel. 04254 77352

OEMs & DISTRIBUTORS REQUIRED BRITISH MICROPROCESSOR

tn the process of designing and manufacturing a range of excitiv and revolutionary products, this company has produced its own modular processors capable of having Motorola 6802 and Intel 8085 co-resident. 8K Basic and Editor and Assemblar programs and resident Monitor. The casing has been professionally and distinctly designed, and a production line is now operational. Wa seek OEMs for this processor, and will also provide complete microcomoular systems to systems houses wishing to undertake turnkey systems. Machiha also suitable for aducational market.

Enquiries to Box No 1031 (all correspondence acknowledged)



TEL ASS-3 3072K 08/8VS/HASP VM/CM8 PHONE

FOR SALE Five years old, £2.500: 80 KVA Mone Block Low Speed Frequency and Vol-tage Converter System. Input 415V or 380V, 3PH, 60H2 output 208V, 3PH, 80H2.

FOR SALE

One unused PDP 11/34A

with KY11/LA operator's consols, two

66K bytss, SYSTIME MOS MEMORY, serial

Apply to Mr. J. H. Peacock,

Dept. of Geological

Sciencee, University of Dur-

hem, South Roed, Durhem

City. Tel. Durhem 64971.

nterface, etc.

Phone: Chris Kandrew on 01-588 3273

for contract staff

Knight Computer Services Ltd., 14 Old Park Lane, London WIYANI,

01-491 4706

POP11/34 and 11/04 Bystoms and Portphasais for Immer Refurblahed PDPII and S Bystoms, and Modules from stock. USED DIGITAL COMPUTERS IN WORKING ORDER TO CLEAR

Occ POP 84, 18X care £1.500
Occ POP 8t, with thermoster £51000 / track nodestical may rape of convenier £1.500
Occ POP 81 or recollent condition £1.11600
Occ POP 81 or recollent condition £1.11600
Occ POP £105 £0X moments \$52 and £100 £11.5000
Occ POP £105 £8X mentary or or polyments \$5555, £2.5000

S.K. COMPUTERS SYSTEMS LTD. Stovenage Read, Hitchia, Harts. Telephone (0482) 35287 Telex: 828715 S.K. SYS.



IBM IBM IBM 029, 026, 059 EX-STOCK • All fully returbished

Guaranteed maintenance Various code options available Tel. 0268-710292

C.B.L. COMMERCIAL CATA LTD., Quantum finned, Roursdon Houth, Siffering, State

FOR SALE 1 Pontor IBM 5293 Model 2 -For Model II, 10, 12 or 370 model 115

ORIENT-COLOUR LTD.

70 Hayerkon Street, Tol-Aviv P.O.B. 26011 Tel. 5 84 83. Telex: 34 1154 ORNCO to

HAZELTINE MODEL H1200 VDU

- Brand new and bosod 110-9800 Band, RSZ1127V24 interlace 1920 (80 x 24) charactur deadny

Avadoble bee Computer Approctation 0883 (Gotisium) 843221 and Display Electronics 01-888 1933

COMPUTERS BOUGHT AND SOLD O B EQUIPMENT LTD

Irrigining and voltage con-vorter system. Input 416V or 380V, 3PH, 50HZ output Fel. 0783-293818 Telox 537763

Phone: Chris Kendrew on 01-588 3273

For salu 5 years old, £2,600

BO KVA mono block low speed

FOR SALE

Available JULY

ICL 19D3 32K CPU Card Roador 1912/1 Line Printer 1932/2

Disc Control Unit 28D t /D 2 x EDS Transport 28D1/2 Multiplaxor 7DD7/2

4 x Telephone Data Torminal 7DD8/5 Contect: J. Gilligen DPM
Blackburn College of Technology end Dasign
Fellden Street, Blackburn BB2 1LH

(0254) 64321

Contract & Permanent recruitment Total DP Support at Itabel Programming Operation Data Preparation System



FOUR ICL PROGRAMMERS

Contact David Pette on 01-681 6044/6751

FERNHART LTD. 18 GEORGE STREET, CROYDON, SURREY



SOFTWARE HOUSE

Small to madium sarvice bureau in W1 seeks to establish parmanant association with small software house which could benefit from a staady flow of business. Competence in on-line intaractive systams essantial. Principals wishing to have an initial discussion, please write giving briaf details of currant operations and staffing to Box No. 1026.

All correspondence will be acknowledged



COMPUTER PRODUCTS LTD

MEMORIES AND INTERFACES

PART NO DESCRIPTION 00-7232 16KW DEC Mos

60-7237 BK DEC Cole Mand 00-7236 PMILLS TOWN Ploase

00-7622

Compatibility. Price/Performance, Reliability. Delivery and 00-7306 4 BMS Disc Drive 00-7308 PSUI or 7305 A 7: Disc Drive4 00-7311 Stornge Module Controller 00-7360 32MO Stornge M Total Software Transparency

All reasons for Fungus Computer Products' enormous success over the past two years. All Fungus sales and service personnel heve a thorough undersiending of the PDPI sedes and the technical considerations no cossary for a successful enhancement.

Proof of our success is the rapidly growing customer base in the UK and Wastern Europo, ncluding industrial, commercia ospital, university and who can confirm the benofits of he equipment and effactivenes of our support services.

Future prospects for Fungus are very promising, as would be indicated by the completion of yet snother highly successful year of operation.

OFFICES:

DISCOR	VES	PART NO 00-7534	DESCRIPTION LA 36 Conversion Modulo to convert	PR
DLLERS			LA 36 to 1200 baud	
	PRICE		forminal with mony	
Hollai	00813		added lealuros	23
hollo	£1600		[Microprocessor based]	842
liullei		00-7530	300 LPM Band Printer	25
	£1250	00.7560	600 LPM Band Printul	28
P	22100	00-7590	900 LPM Onnd Printer	LU
0	12250	00-7740	Suporterm + SR	21
7.306			Terminal 60 CP9 OPL D	
	2300	00-77-11	Supertorm KSR	21
1			Terminal (2010) PS OPT 'U'	2
	C4150	00-7/42	Perfordable 7740/7741	•
Victoria				a estimate
	€4600	6	MAGNETIC TAPES	1,10
Viralinic		2008	ANDCONTROLLERS	
	69993		AND CONTROLLEGS	
Miniulu			QESCRIPTION .	
	TBA			
Montelu	TBA		NRZ1 Mini Tope Deck	8
Cnblo	€45	00-7416		£
MD		00.7430		

OU-7 304 REMIND SHOULD IN INC.

OBS. Drive
OD-7306 266MB Storogo Mc
OD-7306 Richt Storogo Mc
OD-7346 Rehmbland 40MD
Carlindgo Diac Drive
CDC9748
OD-7320 Refurthshort 20MD
Cmtudgo Diac Pulve
Memorice Gult
OD-7310 Diac Laudhalter for Tape Dock 00-7431 Additional Oock for 7430 On 7310 Pisc Faults/Burner of J.)

DO 7310 Pisc Faults/Burner of J.)

DO 7312 High famility purhammance specific airch purhammance specific airch purhammance specific airch purhammance ontroller for 7:052, 7364 storage module alles where of the purhammance of PAPER TAPE AND CARD DEVICES

Obsc Onve 00-7364 128MO Storage

PRINTERS AND INT

MRT NO DESCRIPTION 00-7800 Paper Tape Reador 350 cps with PDPH Interface 00-7601 Paper Tape Reador 500 cps with PDPH Interface 00-7802 Paper Tape Reador 700 cps with PDPH Interface 00-7602 Paper Tape Stollen £1420

AGENTS:

00-7827 00-7828 General purpose inicilad 00-7830 15 Chennol Asynchronou

Single Asynchioneus Interioca Single Asynchroneus Interioco with clock

hiel Asynchronous li aco (2 discreel lines)

00-7912 Cerd cage and backplane 8 quad [16 dual) height PART NO. DESCRIPTION
00-7900 Sorial Asynchronous
interface switch and
programme selectable UART
parameters and boud rides
(75 to 19.200), switch solectable LS1-11 OBUS elots, wedged sockola for gasy module insertion, 10 5 c 4 64 Inches : 11.82 inches ID 5 c4 64 linches > 11.82 linches
MATNO DESCRIPTION

00-7913 L.SI-II Microcompulor

51.440 hytes RAM

operator's consols, line frequency
clock, asynchionous soilal

1/0 module, extended instruction

out, fooling point antimotic
EPROM sock etc. OUUS terminator,
8 quad alot back pitus and
switching power supplies
Eleven extra dual slots
particological termination

00-7914 Termination/Buotstrap

Clock modulo provides

ELSI-II OBUS termination,
power-up sequencing, front
forector, real-time clock, PROM
sockets, one dual halight stol addioss and vector RS232 or 20ma, LSI-11 GBUS compo input, 16 bits output; interrupt control, USI-11 QBUS compatible

0 CONTROL
ORE (HIM) horight stot.
PART NO OSSCRIPTION
4250 00-7903 ORV-II-816 Lili patallol
Interface DMA
00-7904 16 KW Mos Momory
00-7905 64K byte Mos Memo
300 Nanosecond e sockets, one dual height slot

£1050 MISCEL PART NO DESCRIPTION
CO-700G Contint of Contin PART NO 00-7004 Four Skill Back plane 00-7005 9 9 to the chipane 00-7085 Unibus jumper 00-7810 SPQ Protect Carla NAT NO. ODCRIPTION
00-7607 Floopy Disc Controlle
LB1-11 for most 8 inch
Roppy disc drives Jesse Group
Recard Coding for storage of
up to 650k bytes per disc sido

1 All prices quoted are exclusive of VAT

£250

£2847

 Delivery on most producto is 30 days, in many cases as stock, contact your local Sales Office to: confirmation 3 Prices include delivery to any destination within the United Fination, excluding

4 Prices include 90 days return to depot warranty

5 Maintenance contracts may be arranged on oil producte excluding LSI il compatible 6 Prices for deliveries outside the United Kingdom are F.O.B. Leeds

CONTRACT PERMANENT

We are the Specialists! ANALYSTS PROGRAMMERS OPERATORS VDU/KEY PUNCH OPS DATA CONTROLLERS



A&M Buy & sell used Computer Equip-

Tel: 04867 80203

NEW **Olivetti** HIGH-PERFORMANCE TELEPRINTER AVAILABLE WITH

30 CPS PAPER TAPE UNIT TC485...START AT \$1595 FOR BOSTON U.S.A. TESTS W/ Paper Tape . \$875

CALL 617-261-1100

* VP/VIP PUNCH/VERIFIERS CODE CONVERSIONS AS REQUIRED

GI GI La L TERMINALS NEW LA 34 * BURSTERS AND DECOLLATORS

00-7809 Dual loppy disc sub-syr 00-7809 Lino Printer Controller: parallel interface for

parellal interface to contronice, data 100, dataprotuce and other line primers, includes 8 metor data cable; LSI-11 OBUS compatible, one dust neight skill Specify printer type

00-7611 Multiple seri

+ BITY RENT OR LEASE

THANTEHANDE PROTOLED

CONTACT US: 44 HIGH STREET, BRENTWOOD, ESSEX

Telephone Brentwood (0277) 229379 or 213273



145 WARDOURISHREET LUNDON WIV STE

Data Control Teemingal June

CUMPUTER WEEKL1, June 7, 1979 Improving your system tuning

assessments.

LAST week we caran article outlining the various computer performance measurement techniques a DP manager can adopt. Now Nicholas Enticknap (pictured left) follows up with a report of the experiences of four users who conduct regular performance

and capacity planning By Nicholas Enticknap

evaluating any new technique or product to get in touch with a few existing users to get the benefit of their experiences. With that in mind we contacted four installations which have in various different ways made use of performance measurement techniques. The Bank of England serves as

a good model of what can be achieved with the methodical monitor is British Leyland, which uses e the state of the system. approach. Two years ago, a decision was taken to set up a planning and performance groupash separateentity within The central software function. The group's brief was tu accept responsibility for performance measurement and capacity achieved its target conversion dates shead for would re-i PL tho job. planning functions, and also to in vestigate any new software which might be of value to the

In this case the installation management already recognised the value of performance measurement. The effort put into it. however, tended to be rather sporadic, as the software staff were constantly being diverted on to whatever was the Installa on's most pressing develop-ment effort at the time. As a result they decidad to form a dedicated group of three

Thia group approached their work cautiously, doing a careful evaluation of the hardware and aoftware monitors available and attending an Ecoma conference to find out what other people thought. They concluded that the best anawer for the bank's particular circumatances was tha purchase of a

The installation la medium-

sized, with a configuration based on a two Megabyte IaM 370/158 and a two Megabyte 370/148, and a workload consisting of a mix of batch and online applications.

The performance group aow does a regular in-depth investigation of the installation's performance ubout twice a year;

each one takes three or four

weeks to complete. In addition, a

week-by-week analysia is per-

formed. The dsta accumulated

from this work is used both for

tuning and for future capacity

The emphasis of the work is

on looking at where the CPU

tima goes. An important ratio studied by the bank is that bet-

ween program time and CPU

time; over the past two yesrs

this has shown an Increase of

llowed not just by the techni-

management as well. Thay take ware growth. This led to a decian interest in the trends depicted by the figures, and follow indicators such as the number of unscheduled IPLs, the proportion of joba on IMS meeting tar-

get response time, and ao on, To summarise the efforts of the performance measurement team so far, the group have con-

slon to formalise the capacity planning operation. The initial emphasis was on software monitoring, but a few months ago the company decided to tor as a result of what we've commission a study from an Independent consultant, using a hardware monitor.

As Kelth Batt of FCS puts it:

ONE user which does have a hardware enables the operators to take in et e giance Tesdate MS88. This was sequired in the The display might show, for exemple,

context of a decision to centralise DP that the CPU is being used 100%, the operations from five or six different date supervisor is similarly working 100% of centres into a single centrelised site. This, the time, while one channel is being used as might be imagined, was a highly com- 40% and the rest ere idle. This would plex operation, but the corporation indicate a supervisor loop, and the opera-

of schadule, eccording to British Lsylend's Another way in which the British Lay-Tristram said: "if you're seriously into the disc systems. As each disc controller land monitor has proved valuable is with naking money out of DP you've got to get can be accessed by up to four monthe' into performance messurement," end work, British Leyiand reduced the spread gives examples of how the monitor to within 15%, with the least used being facilitates fins tuning. The MBB8 comes occupied 10% of the time end most used with a reel time graphics display which 25%.

> be sure that the systam was pertion, which ia in itself a desimble forming as we'd hoped. In fuct, the study proved more or less Another medlum-alzed Instalwhat we'd expected from the lation which has adopted a software monitor." rather differant approach is Fraight Computer Services, which runs a computing facility for the National Freight Corpo-ration. The company set up a tachnical support oparation a

pased on dual Honeywell 68/10 about 10 per cent. The results of the atudies are The motivating factor here was the difficulty that had been experienced in predicting hard-

year ago to serve an inatallation

verted what was a random function into a planning func-"It seemed unprofessional not to

> This does not mean that the effort was not worthwhile." The study coat £10,000, but it was well worth it to make sure we'd avolded making any wrong decisions. It was also valuable as a brain-picking exercisa; our alm is to make ourselves aelf-

"We're not planning to use a hardware monitor on a regular hasis, only when anticipating major changes, and then we'll rent one. At the moment we're in the process of writing a pure comprehensive software rougi

Alan Knight has more experience of performance measprement than most, buying been introduced to the techniques nearly 10 years ago. For the p.est four and a half years he has been working with the Royal Bank of Scotland, an IBM usec which like many others has had a rapidly changing hardware en-

When Knight first joined the bank the installation comprised an IBM 370/155 and a 300/50; now the bardware is based on two 370/158 APs and a 3032, During the same period teleprocessing systems have been introduced, and they are all now thuroughly integrated with one

As Kulght says, that kind of operation puts a premium on reliability, and the best way to achieve that is to resulve perfornunce problems before they reach significant proportious. This requires constant vigiliage. us well as considerable expertise ta interpret the results obtained. In the bank's case, Kulght says that thuy have achieved excellent results, resolving all socts of alems which were anything

The hank's measurement work is all suftware based, using quite a lut of different packages. mutter how good they are, saya Knight, none of them is

for Sperry

SPERRY RAND, whose ne sulliaries include Unite reported a massive 26 % a crease in profit over its presso financial year which ends March 31. The figures we \$224.1 million compared with \$176.5 million.

Sales of \$4,179 million are 14.5% up on the previous fign of \$3,649.4 million. Found quarter figures were \$85 m lien profit on \$1,185.8 miles sales. This was a 16.8% long on the comparable quarter in the comparable quarter in

Perkin-Elmer upped its sig hy 26% for the third quene compared with the previous financial year. Profits were \$133 million on \$189.2 million als compared with \$9.4 million m \$15116 million in the previous merical. This also represents du"a increase in profits.

An increase from \$14,73900 o \$16,175,000 for the firm manter of 1979 over the sans urried last year has been reported by Modular Compose Systems. However, net professions down at \$99600 compared to \$1,139,000 in 1974

tion news bulletin. Digital Equipment sales h he quarter up to the end of March were \$465.9 mm compared with \$174.8 millionfa the same quarter in 1978. Profit hefore tax for the comparate quarters were \$79 miller at \$59.2 million respectively. Sales figures for the two

quarters were divided into equipment sales of \$353.5mm (\$295.4 million in 1978) and sevice and miscellaneous sales d \$110 million (\$79,3 million is

Computer Sciences accounts for the year ended March 3 stated sales of \$343.2 miles with a profit before tax of \$331 million. Comparable figures to 1977/78 were snles of \$2772m llon und hefore tax profits \$24,3 million.

The profits for the four quanter were reduced due to 1 \$1.9 million charga resulting from thu withdrawal of h employees from Iran.

Four-Phasa Systems reported sples of \$40 million and profits the fore tox of \$5.1 million for its quarter ending March 31.7kg compurable quarter in 1978 has sales of \$29 million with below tax profits of \$3.5 million.

Breaking the 27% profit barriers of apartheid

by all companies in the private sector of a Code of Employment Practice that will eliminate discrimination based nn race or colour from all aspects of employment, including selection promotion, pay, fringe banefits of all kinds, and training. This Code must not remain as plous words but must

be airue instrument of change." This is the gist of a statement that anticipated by nearly two years the South African Government'a announced intention to end tob apartheid.

its joint sponsors were SSACOLA, the South African employers' federation and the Irban Foundation - a body dedicated to improve the quality of life for all non-whites which is supported by subatantini subscriptions from more than 100 large and influential local companles. The Code has been generally well accepted and is eing actively implemented, according to a recent Founda-

Enlightened self-Interest has but the major computer companles in the vanguard of the movement. For they are faced by an acute ahortoge of technical skills that threatens their de-velopment in a wealthy, southsleated and expanding market. Vellaware that white resources are inadequate to meet their needs, they have stepped up theireffort to mine the rich seam

of unexploited non-white tulent. IBM, for instance, will spend more than \$3 million on black education during the next three years, according to ita 30-page Special Report on Suuth Africa" published inte last year.

One project involves cooperation with the American amber of Commerce In South Africa and other US husinesses to fund a five-year commercial high school far 000 students. This will also provide adult

act as a community centre.

Sperry Rand, parent corpnration of Sperry Univac, in February 1078 announced a programme of "affirmative action" in support of the Slx Point Plan. The action covers multirncial in-house training in literacy and in supervisory, clerical and this for charitable reasons. workshop skills and will include We're determined to increase financing attendance at external

Don't imagine, though, we're in

As far back as 1973, Burroughs least as competent as any we was employing a significant proportion of non-whites withjobs. It has continued ever since as technical ability, apecially for ped out or failed; 05 graduated. to expand the acope of that prothose who will be working With a 91% pass rate — all sends some trainees to ICL. Two

"One misconception IBM helped to blow sky-high is that some blacks whose cultures never included the use of mathematics, while able to fix machines, would probably not understand programming," says the company's "Special Report". The fallure of its early attempts to teach Cohol to blacks was found to stem solely from lack of sufficient opportunity for hands-on experience.

The amhitious, comprehensive technical training scheme that ICL has now operated for over a yeur haa also proved beyond doubt that a white skin ls no prerequisite for successful computing, either in-house or on customer sites.

"Without the five 'graduates' from our multiracini training school we would never have got our Protea project off the ground," I was told by John Theobold, Internul systems innnager for International Com-

nutors SA (Pty). Protea is the specification and design phase of a complax online system which will keep tabs nn hardware ollocation and order progreas and will evantually be used company-wida.

"It is paront bnard policy to omploy, in management as well

DATA DESIGN TECHNIQUES LTD

LA34 DECWRITER IV

£825

FOR LIMITED PERIOD ONLY

Price includes delivery, installation

and 90 days parts and labour warranty AVAILABLE EX-STOCK FROM:

DATA DESIGN TECHNIQUES LTD

58-80 Harthfield Bead

SLASBOW: 041-221 1761

TELEX: 49200

6-6 Lawer Charch &L. Checkless Speech MPS held



of all the cuuntries in which we John Brett, manpower developoperate," I was reminded by ment manager, architect of the believe our aelection parameters John Starkey, ICL's managing multi-racial training programme director in South Africa. "The and himself a South African. Only the number of whites fact that, like everyone elae, taking up the story. "Aptitude is

(IBM has 33%) and this implies these, we tested 842; 213 did well remainder are educated to using only people who are at enough to go forward for perso-matriculation or HNC standard. nal interview; and 75 were accepted. Seventy-one of these ever, itself a pioneer in non-"Personality is an important completed the courae, 10 drop- white training in artisan and

Standards are never bent.

marked by line managers - we

was atypical, for it included four deaf mutes of whom three were we're badly ahort of skilled only one of the wide range of not on the ICL payroll. Eight of people is a further incentive. assessment tests we use. the 36 are computer science graduates; six have relevant de-"For the first three courses we We're determined to increase our present 34% market share cants," Brett continued. "Of undergraduatea; the

Three are destined for Unil-

WHENEVER South Africe is discuesed most people take up positions behind the berricades. Here LAURA TATHAM gives a personsi view of the progress the republic ie meking to breek down the berriers of epert-

Our picture shews Chief Gateha Outhelezi, chief mintster el Kwazulu, presenting a diplome to Peter Oney, one of 32 students of ell reces who successfully complated ICL's second and third tech-nicel training courses. Watching is Jehn Grett, menpower davelop-ment managar for ICL (South

will go to Indian Affairs.

Twelve graduates from pre vious cnurses are now working in various African territories The others inve been absorbed into ICL joba that range from cuatomer support to software deaign and the tsiloring of package programs for local

The big queation must be whether integration really works in practice. During my stay in South Africa, I took fu est advantage of many opportunities to mix socially, and un Inhibitedly to question (without eavesdropping) men and women of every race. Alert to detect any sign of social strain, I could discover only total "colour blind-



Sorry, but we've just made your computer out of date.

It had to happen. Technical innovators like Sperry Univac can't sit still. And if your business is going to keep moving, you can't afford to either, So for both of us, the introduction of the new 1100/60 mainframe series computer is a big step forward.

The 1100/60 offers a new low cost entry point into the famous 1100 series. It is the first computer to have multi microprocessors and it is based on a single operating system that gives complete compatibility from the smallest 1100 to the largest.

This multi microprocessing will not only an swer all your immediate computing needs, but will also be capable of keeping pace with any expansion your organisation makes.

Add to that the fact that the 1100/60 is incredibly compact for its capabilities. and that it is also very competitively priced you'll see that it is essential for you to find out more. So write or phone the Markelias Director, Sperry Univac Centre, London NW10 8LS. Tel: 01-961-2110.

Magnetic tape from Control Dataset.

Because your major investment must deserve the major supplier.

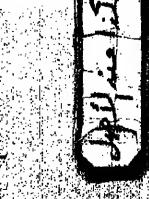
It's no surprise that Control Detaset is the U.K. computer industry's leading supplier of magriculo media.

Mein frame businesses know there are strong reasons for relying on Control Datasel. Such as the system/drive/head/media total on Control Datasel. Such as the system/drive/head/media total technology objectify of Control Data Corporation. The exclusive supply of CDC end ICL label products. And the backing of Britain's biggest sales and technical support force. CD Alpha and Omega label and ICL label products are CD Alpha and Omega label and ICL label products are exclusively manufactured at Control Datasel V.K. plant, allowing full centrol over production and simplifying delivery.

So rely on the leading brands from the major expoller.

Call Control Dataset on P438 3322 for all your magnetic.

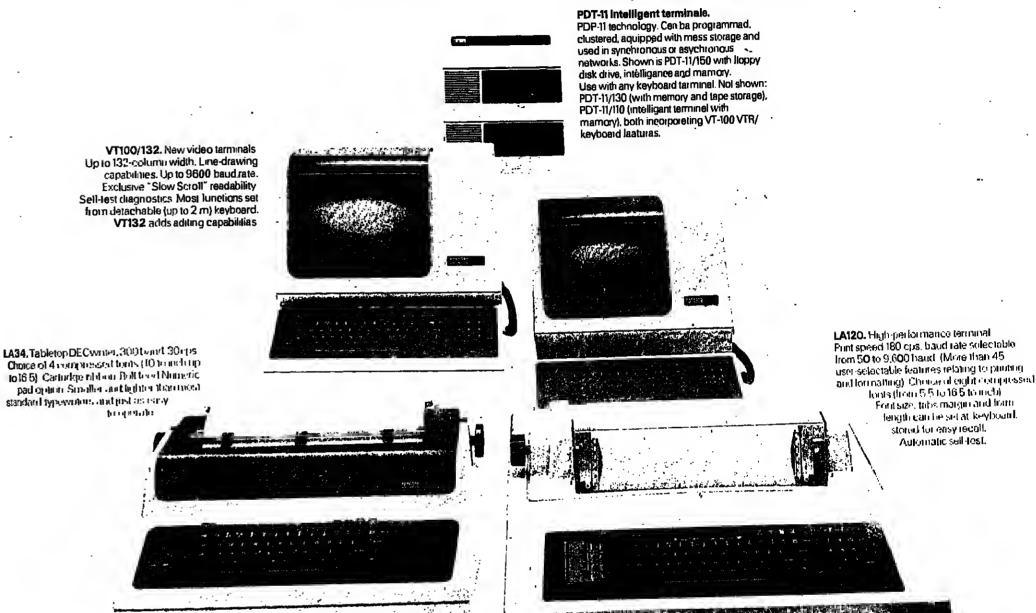
DATASET More than a Computer Company



GÐ

CONTROL

In technical terms, they look very good...



In human terms, they feel even better.

Suddenly, the broadest range of terminals in the industry has

Major introductions. New video terminals. New hardcopiers. A totally new family of programmable terminals,

Terminals you can quickly combine into a common communications network, because their control codes are all part of one carefully thought out intercompatible standard. All offer a wide renge of communications interface

options. Customer-assignable function keys. High commonality of parts, right down to standard IEC 435 line cord. All have switching regulators, for quieter, cooler. operation. And for neater, more compact styling.

Human engineering specialists have colour-toned

each terminal to blend competibly with the modern office environment. Keyboards are standard typewriter leyout, with keys finger-sculpted and position-identified to meximise acceptability by any keyboard operator. Operator status lights

Still, these new terminals only represent a pert of the total terminal family we have to offer. And if you haven't yet found out the advantages of dealing with the industry's only true "one-stop" terminal supplier, perhaps now is a very good time to find out.

We'll be very glad to send you deta on all or any of these new terminals. And if you want to know more about existing terminals, like the well-known LA-180 line printer for example, just tick the "basket" box, too Digital, I'd like your Components Group to send me

New video terminals□ New hard-copy terminals□ New PDT-programmable terminals ☐ I don't know your full range... send me a complete basketful□

Send to: Components Group.

Digital Equipment Co. Limited. Digital House, Kings Roed, Reading, Berks, RG1 4H4



Spark of success for powermen

Mnnweb powered through to the final of Computastara when they left the opposition behind with margins of 12 and 17 points respectively in the North-west

Held at the Kirkby Sports Stadium Liverpool on Sunday, the 22 Mens teams were nut into four groups with the winners going through the the heat

As a result of tles, 12 teams made it with Manweb, the local electricity board, being the overall winner with 170.5 points and are pictured below. The events were discus, standing long jump, soceer penalties, short sprints and 200 metres

The Ladies will be represented by the British Nuclear Fuels team from Warrington (pictured below) who beat the Midland



Bank North-west Computer Centre's team Into second

place with 132 points.

were: shot putting, standing long jumps, throwing a cricket ball, netball shooting, dribbling a hockey ball, short sprints and the 600 metres ateeplechase

Evens in the Mens finals were: ahot putting, dribbling a soccer ball, dribbling e rugby ball, squat thrusts end the 800 metres steeplechase. There was a secondary competition for runners-up in Round I.

In the individual events, the Men fought a close battle with fractions of a point being used to decide placings in the final lineup. However, this did not stop Mike Guest of Littlewoods and Roy Watson of Woolworths Heing on 43.67.

In the Ladies individual Eleven Ladles teems entered events, the final placings were and the winner was decided clear cul with Maureen Dooley from the team with the best beeting Michella Probert into placings in seven events. These second place.



Barrie steps into breach

THE old Army saying obout not volunteering for onything did not sppty as far os Untiover omputor Bervices Ltd's Berris oldry was concerned. Barris, who had just flown in from Hamburg, wee looking forword to a rotoxing afternoon watching the competition. But on hasring that there was a ehortegs of merehalle, Barrio promptly votuntsered to oct or etartor for the roces.

petition must have been the steeplechase events which, at times, bore more relation to scenes from Monty Python than events run under the AAA rules.

In particular the Ladies little metres proved a papular diversion for the men who crowded round the water jump. The object, in Theory, was that the competitor should get aver without getting her feet wet. At lenst three of the ladies just went over regardless, causing ripples

In the Mens 800 metres steepleehase, one of the runners turned the tables on his detractors. The competitor, who was too shy to identify himself, fell in and promptly started to splash water over those laughing spectaturs who couldn't run away fast enough.

on the water.

There are just two more hears: to go before the finals on Saturday September 29. The East Anglian heat will be held on Sunday, June III at the University Athletic Ground, Milion Rond, Combridge and there are 19 leams competing.

The Copthall Stadium Barnet is the scene for the big North Thames hear on Saturday, June 3lt with 47 teams fighting for

Computer Weekly in conjunction with Wright Air Con-

Mens: Allied Hakerles Land H Liverpool, Bloth, Liverpool; British Muclean Fuels, Warrington; Data Lugic, Manchester, Fraser Williams & Co. Land II, Manchester, Gental Computer Services, Manchester, ICL (Focal Govt), Liverpool; lahial Liverpool; Liverpool Post, Liverpool Management Pontrol Systems; Manweb, Manchester; Midland Bank (154W) 17, Bootle; Perkin-Elmer Data Systems Land II: and, Wool

Ladles: Allied Bakertes, Liverport DRC, Liverpool, British Nuclear Engls, Warrington; Data Logic Manchester: Irraser Williams & la Manchester; tr'l. tlacal Gott. Liverpoot; Littlewnods, Liverpool Liverpool Cost, Liverpool, Manweb. Munichester, Mulland Bark (NWT), Rootle: and Woolworths. Rochdale.



Luiltes Jenni evenis: I British Nuclear Fuels, 132 points; 2 Midland Bank., 120 5; 3 Wordworths and Iverpool Post 110.5 each; 5 tittleworkly, It that I uple and 7 DICC and

Atter Bakeries (joint placing).
Ludles Individual events: Municen Dudley, Milland Bank, 54 points; Z. Michelle Pribert, Brhish Nucleur Fuchs, 51; and, 3 Lynday Kenworthy, Worldworths, 405.

Mons Jenn events: t Manweb. Mons tenni events: t maintenit 17it 3 pulnis; 2 Managomant Control Systems, 153.2; 3 Midland Bank, 153; 4 Elittewands 11; 5 Data Logic; 6 Elittewoods 1; 7 Woniwarihs 1; 8 Initial Services; 9 Inland Revenue; tiemint Computer Services and Windwirths II (Juint placing) and II

Mens individual avenist I Mike Mens Individual avents: 1 Mac tiuest, Littlewooda II and Roy Watson, Woolworths I, 43.67 point each; 3 L. Wise, Management Con-trol Systems, 39.2:and,4 Emyr Jones,



Maureen Dooley who pipped Michelle Proben for the Ladies Individual competition. Moureon, who worke for the Midland Bonk'e North-west Computer Contrest Bootle, finished on 84 points while Michotis, who works for British Nuclear Fuote et Warrington, had 81.

LEFT - twee the luck of the Oirieh for



Ayston Parece je
September. The team
— Mary Mortin,
Michelle Probert eed
Julie Wiszowaty —
emassed 132 polete
with the Midfand
Bank traiking in
second place on
120.5,

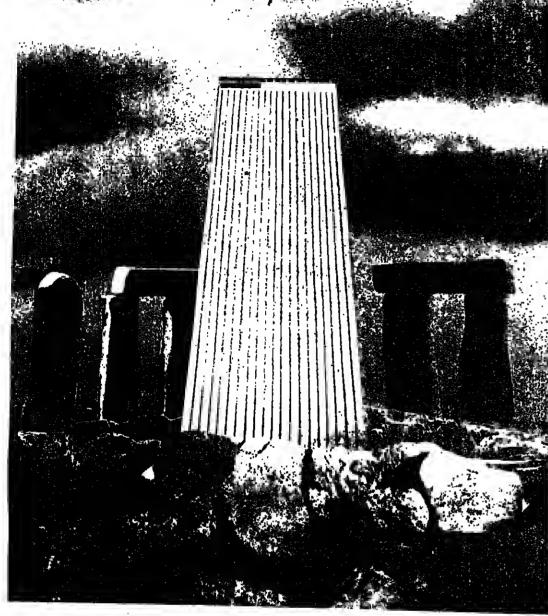


digital Digital Equipment Co. Limited

£10 per single

26 - E7

column centimetre SERIES DISCOUNTS:



Perkin-Elmer opens the next chapter in computing history. With the introduction of the Model 3220 — first processor in the new Series 3200 — the second generation of SUPERMINIS makes its historic UK debut.

Highest Performance

Perkin-Elmer introduced the world's first 32-bit SUPERMINI in 1973. Now, with a background of over six years practical experience from more than 2000 installed systems worldwide, the second generation Series 3200 arrives as other manufacturers are just iaunching their first.

The Modei 3220 has full 32-bit architecture, a data transfer rate of 8Mb/sec, MOS memory in 256Kb modules up to an uitimate 4Mb, memory error logging down to chip level, cache memory and 128 32-bit registers.

Lowest Cost

With all these features and many more, the Model 3220 costs less than many currently available 16-blt systems, a major cost breakthrough. For the first time, this brings within economic reach of a wide range of users the speed, accuracy, power and I/O handling capacity normally associated with 'mainframe' computers.

Mature Software

To match the most advanced hardware. Perkin-Elmer 32-bit software has been refined and proven where it counts - in the field. This powerful software includes OS/32, a real-time, multi-tasking operating system, together with a host of language processors and utilities, including COBOL, globally optimising FORTRAN

VII, BASIC, CORAL 66, iTC transaction monitor and OS/MTM for muiti-terminal program development facilities.

The 3200 Team

Perkin-Elmer, a Fortune 500 company, is world-renowned as a major manufacturer of high-technology optical, instrumentation and data processing products. The Model 3220 SUPERMINI is the latest evolution in the company's commitment to industry leadership and innovation. It is backed by years of field experience, fully-proven software and a team of dedicated professionals committed to making your installation a success.

Find out how the 3200 Team can help you. Return the coupon or call Jane Berry on Slough (0753) 34511.

PERKIN-ELMER Computer Systems Division

227 Bath Road Slough Berks Tel: Slough 34511

The new big name in computers:

I am interested in t	he Model 3220	Di		1	
Name		Please let 11	ne have full	informati)ľ
Company	ľ	osition			<u>ک</u>
Address		—— Telepi	none No.	1000	4
TO THE WALL SELECTION OF THE PARTY OF THE PA	Marie Territoria	The state of the state of		1	1

CHRIS PRIER

01-261-8028

LONDON Eddie Farrel 01-261 6097

Mark Williams 01-261 8019 Mark Pulver 01-261 8174 John Farrer 01-261 8098 Ken Waltord 01-261 8454

MANCHESTER/GLASGOW Owen Kelly 061-872-4211 Geoff Alken 061-872-4211 BIRMINGHAM/BRISTOL Basil McGowen 021-856-8838

COMPUTER WEEKLY - Highest requested circulation at a cost per thousand 25% lower than the nearest competitor.

IMYRIAD

IBM DOS/COBOL PROGRAMMER

IBM $370 \rightarrow IBM 4300$

NEAR WINDSOR

This position offers an excellent opportunity for the career-minded programmer to utilise their IBM expertise and progress their career development within an organisation committed to an extensive and

The company operates a countrywide distributed processing network for which further systems development projects are planned.

The successful candidate will perform a key role, offering a sound IBM DOS and COBOL technical background, with responsibility for enhancing

Experience of CICS and DL/1 is a valuable asset, However the person appointed can look forward to receiving training enabling them to

A varied career is offered moving either to a more commercial systems and programming position or to further enhancement of the technical role.

The Company is a household name in the home entertainments industry and is a fast expanding member of an international group. The benefits package is The Company is a nonserroid name in the nome entertainments maistry and is a fast expanding member of an international group. The benefits package is very competitive and includes a substantial discount on company products and a pleasant working environment. The excellent salary offered is an indication that this position will provide a real career move for the progressive-minded programmer.

Ref. NW2/0706/CW

NEW IBM INSTALLATION ANALYST/PROGRAMMERS **PROGRAMMERS**

N.W. LONDON/MIDDX.

TO £8,000

A major manufacturing and ratailing organisation with outlets throughout the U.K. and Europe is saeking additional development staff to work on systems from feasibility to implementation.

This is an ideal opportunity to join a young department in which the applications ranging from Production and Stock Control to Goods Distribution and Management Statistics.

The installation works to high standards and encourages the use of the latest techniques for which formal training is provided.

Candidates should have a minimum two years' commercial experience encompassing design and specification writing. Applications from experienced Programmera who wish to progress to analysis will also be considered.

The Company operates a medium-size IBM installation with an on-line network. Conditions of employment and opportunities of carear advancement are excellent. A first class commancing saisry will be offered.

SALES EXECUTIVE

S. LONDON/KENT/ SURREY/WEST SUSSEX

c£10,000 + CAR

This vacancy presents an excellent opportunity for an experienced Bureau Saies Executive, or perhaps a saies oriented Analyst experianced in general Commercial Systema, to join one of the foremost sarvica organisations in

The person appointed will take over an established territory with an active ciient basa and a good prospect list. The Company prov support to their saies force who have the advantage of marketing extremely advanced and powerful products to numarous aectors of commerce and industry.

Experience of angineering or mailing systems would be an advantage. There is also a complete range of services from machine time to specialist.

systems and programming services.

The Company offers good conditions of amployment and a rewarding carear path leading to main line management. Raf. E1/0706/CW

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London ECAY IAA

MYRIAD

OPERATOR

N. LONDON

c.£6500

An excellent opportunity has erisen for en ambitious shift leader or chief operator seeking career advancement.

Leading a amell team of operators the Chief Operator will be responsible for the day to day smooth and effective running of the operators department and maintaining an efficient service to users. In addition to ensuring maximum throughput is achieved in a multi-programming environment, the person appointed will be responsible for maintaining a high standard of operations expertise and provide technical guidance where necessary.

Candidates should have a sound operating background using 1BM System 3 equipment and ideally have experience of working in a multi-programming environment using CCP utilities.

The company provides computing facilities for its outlets throughout the UK and Europe, and this position offers the opportunity of career advencement within a rapidly expanding

This is a non-shift position and is accompenled by good conditions of employment and an attractive range of fringe benefits.

Ref. Ni/0706

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London. EC4Y IAA 01-353 0981 (24 HOURS)

ATA COMPUTER RECRUITMENT (Scotland)

ATA hes, almost two decedes of consultancy experience, a nationwide network of offices, and probably the largest portfolio of client Companies in Scotland. We are currently drawing up short lists for en unprecedented number of 0.P. Positions, the most urgent of which ero listed

TECHNICAL PROJECT LEADER capable of leading a team of COBOL Programmers carrying out a feesibility study into On Line — interactive distributed processing in a commercial environment using a 'New Generation' Mini. c £6500 + benefits

EXPERIENCED SOFTWARE HOUSE MANAGER c£10,000 + profit sharing + car

EXPERIENCED DATABASE ANALYSTS AND PROGRAMMERS IDMS/OBMS/

SYSTEMS PROGRAMMERS IMS OB/DC IBM 3031 with manufacturing/financial or insurence experience c£7500 + benefits. CICS ASSEMBLER PROGRAMMERS IBM 3031/manufacturing environment c£7000

ANALYST PROGRAMMERS with experience of On-Line systems for an international DEVELOPMENT ANALYSTS with financial/menufacturing/production/insurance or

conatruction experience for IBM/MVS or ICL 2970 environments, c £6500. GRADUATE ANALYSTS end PROGRAMMERS with more than two years' experienca wishing to gein ICL 2950 (MAC) VME/B On-Lina/Systems Development exparience.

EXPERIENCED IBM OPERATORS 00S/OS/MVS. c£4000

Imitiess requirement exists for commercial Analyst/Programmers c£4500-

All of the above positions carry full relocation expenses where applicable

For further information on these end the numerous other vacancies which currently exist in

H. W. CLARK on 031-226-5383 (lines open until 8.00 pm Monday and Tuosday)

or write to:

ATA Computer Recruitment
Anglie House, 24/26 Frederick Streat, EDINBURGH EH2 2JR

ALL APPLICATIONS WILL BE PROCESSED IN STRICT CONFIDENCE. IF INVITED FOR

ON (01) 637 0781 MANCHESTER (061) 832 5856 BIRMINGHAM (021) 643 1994 BRISTOL (0272) 211 035 EGINBURGH (031) 226 5381 GIIAWLEY (0293) 514071 BISHOP'S STORTFORO (0279) 506331 SOUTHAMPTON (0783) 37555

R.P.G. II

EUROLOGIC are leaders in installing small business systems particularly for small users. We specialise on IBM S/32, S/34 and S/38 using RPGII and are willing to train you onto these machines so long as you have a minimum of:

- ★ 2 years' programming on small machines
- * an aptitude for learning
- ★ exposure to commercial systems

Of course, if you already know RPGII or have a knowledge of system design and the ability to deal with users, then we would particularly like to hear from you.

For the right people we offer:

- ★ Salaries from £4,500 to £8,000
- ★ Company car after a period
- **★** Bonus scheme
- **★** Expenses
- ★ Reviews every 6 months
- ★ Wide variety of customers and

We have vacancies at the levels of

- Project leader
- Analyst programmer
- Programmer

Please call RICHARD BARKER or MIKE CANNON on (01) 549 8937 or 8933 to arrange an interview

Eurologic Software Ltd. 12 Canbury Passage, Richmond Road Kingston upon Thames, Surrey Was the second second to the second s

EPUT SOME LEISURE INTO YOUR CAREER Leisure is no longer simply a relaxation — today it is a major

Due to an increase in new developments throughout the Rank Organisation the following vacancies occur.

SENIOR ANALYSTS

to £8500

Both a Senior Analyst and Systems Analyst are required with upwards of two years systems experience gained in a commercial sphere. Involvement with financial or on-line systems would be a decided asset. In return the Rank Organisation can offer you a challenging position developing systems for Butlin's, Pinewood Studios, or Central Services.

ANALYST/PROGRAMMERS

to £7250

A good COBOL programming background allied to sound analytical skills could well gain you a senior position either with Butlin's Marketing Systems or in the Rank Leisure Services project team.

PROGRAMMER SPECIALISTS

to £7250

The senior position of PROGRAMMER DEVELOPMENT SUPERVISOR has recently been created to implement the Systems Design Philosophy coupled with the training of programmers. If you have a minimum of 4 years COBOL gained with IBM 370's, and are a good communicator then this is an excellent career step for you. In addition, the rare opening of JUNIOR SYSTEMS PROGRAMMER occurs. If you have good ASSEMBLER experience, then our clients can offer you the opportunity of moving into systems programming where you will be involved with operating systems, TP Monitors and new software developments.

These are all superb opportunities for you to put some leisure into your career and be well rewarded for your skills. So don't delay — contact us today.

growth industry bringing to so many more people the opportunity to enjoy the fruits of their labours. Tomorrow the horizons are limitless with even the most restrained forecasts predicting longer leisure hours

and a higher standard of living to be enjoyed. This is an opportunity for you to participate — and to put experience of the leisure industry into your career by joining Rank Management Services at Whyteleafe in Surrey. The work is interesting and varied, helping to solve problems for a wide range of leisure companies such as Rank Audio Visual, Butlin's, Top Rank Clubs, Rank Hotels.

The working environment is first class and includes:—

* ATTRACTIVE SALARIES * IBM 370/138, DATA GENERAL minis and IBM SYSTEM 34's

* BASED IN RURAL COUNTRYSIDE AT WHYTELEAFE, SURREY

* FLEXITIME/PAID OVERTIME

- * DISCOUNT ON COMPANY PRODUCTS SUCH AS WHARFEDALE HIFI, PENTAX AND NIKON CAMERAS, TV AND RADIOS, GOLF CLUBS, HOTEL RESERVATIONS ETC.
- * USE OF COMPANY CARS Interested? Then either telephone to discuss the vacancies, or simply clip the coupon and we will forward

an application form together with full details.

Quote Ref: CW 139-98

CAPP ASSOCIATES SA Services A.M.P. HOUSE, DINGWALL RD., CROYDON.

04-686 9693

Elokeayopointments elokeayopointments Elokeayopointments

KUWAIT

: packages worth up to £35,000 p.a.

D.P. MANAGER £15-17,000

- Schooling end Travel Allowance

SYSTEMS ANALYSTS eround £11,000

- Fully furnished epertment

KUWAIT has a hot but accepts bis climate. Many facilities are available, including sporte centres, English T.V. and reasonably-priced restaurants. The large ax-patriato country is sociolly active, there being then being then being the property and trequent parties. Costs of food and household items for a family of 4 could perhaps amount to £3,000 per annum, including sometimes setting at realisments, and there are few other ossential costs. The apartments are built and

THE COMPANY: Our client is a long-astablished and successful agent in the Guff erea for many major Companies, including Caterpiller and Volvo. As one of the largest organisations within the private sector in Kuwait, they offer accure employment and a most attactive remunaration package. This includes leavel facilities which anable children aducated in the U.K. to spend achool holideys with their families. Encal calculation is good up to the age of \$1. The curant DP Manager hee decided to return to the U.K. after establishing a highly effective duel-processor, Burroughs 1728 computer installation during his 4 years in Kuwait. This equipment is currently used to handle parts inventory, with on-line anguing facilities, and it is pleaned to develop further new systems in the near future. The Company therefore wishes to find a replacement for the OP Manager and to expand the OP Department by recruiting two additional Systems Analysts or Senior Analysts.

D.P. MANAGER

Responaibilities:
To menage all aspects of the current functioning and further development of the Cata Processing Cepartment and the associate provides, controlling 18 staff.

Required Prolite:

Candidates who have spant less than sight years' in DP are unlikely to have the required depth of experionce, which will include OP or Systema management and a good background in systema development and implementation. Knowledge of date communications would be useful.

SYSTEMS ANALYSTS

To handle all aspects of the davalopment and implementation of computer systems, which may actude

- Required Profile:
 1. 2 years' programming expariance, including gond CDBOL
 2. Experience on disc-based systems
 3. Good systems background, including responsibility for the

THESE POSTS OFFER THE PROSPECT DF SETTING ASIDE VERY CONSIDERABLE SAVINGS WHILE DEVELOPING A WORTHWHILE CAREER. PLEASE RESPOND WITHOUT DELAY



Crown House Morden London SM4 5EU

consultancy division 01-540 8311

£20,000 + p.a. **Systems Analysts** & Programmers

Our client has racardly won a £muftl-million confract to provide a radar and flight data procaseing system to cover the Austrian flight information region. The project is based on DEC computers using distributed real-time processing, communications and sophisticated peripherate. Several opportunities exiat to join the team in Vienna in this absorbing and creelive work. Contracts are for a minimum of 2 years and around 4-7 years raal-time aoftware experience ja desirabje.

The peckage consists of a highly competitive salary together with attractive relocation conditions and such benefits as tree aducation for children and free



PERSONNEL ADVERTISING LIMITED

Pinnahantto, philographic access theory to Deet Macmiller, Personnel Advertising Limited, 22 Red Lion Street, London WC1R4PX. All replies will be sent forward to our client unless we are instructed otherwise. Please quote ref. GRS 538.



SAUDI ARABIA

personnof for f8M 3031 computers:

- 🖿 SYSTEMS ANALYSTS £27K P.A.
- COMPUTER OPERATORS £20K P.A.
- UNIT SUPERVISORS £20K P.A.

Alin 3 yrs. exp. in date processing to include one of the following itelds

Schaduling on 1/0 control Job set up or production control
Operation, programming and interface

Above salaries are meximum depanding on expansinge and qualifications. Pieser ring 01-801 4321, Sheikh-Hasham Overseas Personnel Ltd.

The was tanders were now, which a separate a sign and a the same development of a distribute of the control of

PROJECT MANAGEMENT, SENIOR CONSULTANTS E.D.P. SYSTEMS

UK and abroad UK salary up to £12,000 + bonus Generous overseas allowances

OUR CLIENT is a major software house within the British Computer Industry who continues to achieve both substantial annual expansion and increasing profit. Specialised, and highly skilled, professional attitudes are maintained at all levels within the organisation.

THE POSITIONS need malure, experienced individuals who can maintain and enhance an excellent reputation, whilst providing the qualities essential for leadership of project personnel within revenue objectives. Specialist areas include applications knowledge of the Oil Industry, nationalised industries and public corporations or experience of the development or installation of large operating systems.

APPLICANTS should be specialists in their particular areas and capable of ensuring that the resources of the company are made available to clients in an effective and efficient manner as well as demonstrating significant measurable achievement over the last two years.

FOR THE appropriate candidates, terms will not be a major

Write in confidence quoting CW 602 to John Hodges - Adviser to the Company

LIOK Appointments LIOK + Appointments LIOK + Appointments

ADDS (UK) LTD A subsidiary of Applied Digital Data Systems Inc.

National Sales Executive Train in the USA 'Ground Floor' opportunity Micro-Based Systems

Applied Digital Data Systame (ADDS) is the world's leading independent manufacturer of microprocessor besad display terminels. ADDS (UK) Ltd. is the U.K. System division of the Company and over the last 2 yeers has established e sound user base of micro-processor besed diskatta computer systems with communication fecilitates. The company is now involved in a campaign of considerable axpansion vio a network of OEM distributors and lerge-scale end users.

A key alsmant of this planned growth is the appointment of a sales executive, based in the company's naw offices in

London

to take over complete responsibility for seles of the Ragent 300 end ADDS System 75, to OEM Distributors and National Accounts throughout the UK. This is a new appointment and represente en outstanding career opportunity for a selesman who le capable of operating

We are seaking an experienced sales executive with a proven record of sales success. Alternotively, we will consider applications from

Sales Support Analysts

with experience in pro-sale support of smell business systems wishing to move into selling. Total Income package of

£13,000 + 2 litre Car

will be peid, of which 50% will be basic salary. A gueranteed Income of up to £10,000 will be paid In the first instance.

Plassa contact Bernerd Conn or Caroline Connabaer quoting reference ADD062.



SMR Sales & Marketing Recruiters Ltd., Victory House, 99 Regent Street, London W1R 7HB, Telephone: 01 734 9776.

London + E.E.C.

International Systems and Software Group with offices in London and throughout the E.E.C. are expanding their already sizeable project teams in the IMS applications field.

Our client is seeking experienced IMS (DB and DC) Consultants, Analysts, Analyst Programmers, Programmers and Systems Designers with back-grounds in the areas of Financial Banking. Stock Control, Order Entry and similar applications. The programming languages in use are COBOL, PL/I, MARK IV and Assembler.

Successful applicants will receive well above market salaries in addition to a Benefits package commensurate with a prestigious International group. The fluidity of middle and upper management ensures excellent advancement prospects.

Interviews will be held in London as soon as applications are received and offers will be made within 7 days.

£10K+





Avon House, 360 Oxford St., London. WIN 9HA. Tel: 01-491 4636 Talex:28800 Londof G.

Internal Consultants

Computer Systems Audit/Security London based, to £10,500 + car

appraisal of operations methods

These vacancles arise through promotions within a function recognised as providing excellent and varied prospects of career advancement. Our client varied prospects of career advancement. Our client is a multinational manufacturer and distributor of business equipment and supplies. Successful candidates will be members of an internal candidates will be members of an internal consultancy team providing international management at all levels with a professional management and an assurance of the integrity of current systems. Candidates, probably 27-35, must be graduates with Candi

N.P.S. Lilley, Ref: 22134/CW

Male or female candidates should telephone in confidence for a Personal History Form to:

LONDON: 01-734 6852, Sutherland House, 5/6 Argyll Street, 1915-662.

A \$25,000 Bite at the Big Apple



At 42nd Street and 2nd Avenue on the 17th floor another link in the Atlantic Alliance was forged this week when Logistix took up residence in their New York offices.

We have some major assignments on the East and West coasts and the Mid West for Analysts, Programmers and Systems Designers. If you would like to join one of our client's project teams on a 1-2 year assignment you should offer: a) 2-6 years solid technical experience involving design, programming and implementation. b) Ability to operate in a disciplined environment involving a systems design methodology. c) Experience of either O.S. COBOL, IMS + TSO or System 34 distributed processing linked to a large Main-frame.

Single status is perferable. Initial accommodation costs and return air fares will be provided in addition to a substantial completion bonus. Interim return air fares will also be paid as well as Blue Cross and Blue Shield medical insurance premiums.

> Please quote Ref: USA/1.



Avon House, 360 Oxford St., London, WIN 9HA. Tel: 01-491 4636 Telex: 28800 Londof G.

Assistant to Group Computer Controller

This post, in e mojor diverse international Reteiling Organisation offers e complax technical and persanel challenge to e highly motivated end intelligent graduste.

The work involves edvising the Group's Perent Board and the Directors and Staff of Subsidiery Campenias on metters concerning computers, telecommunications, offics eutometion, micro-processors, systems, softwara and equipment acquisition end financing stretegies.

Applicants of either eax, between the sgas of 24 and 32, should poseess a sciance dagrae end ideally heve written tela-processing softwera for mini (micro computers in e commercial anvironment, and shauld now be interested in extanding and applying their skills and experience in a profit-conscious organisation.

Adeptability, good communication skills, perseverance and the ability to work successfully aither eingly or as part of a team ere more importent then paper quelilications.

Selery will be negotisble eround £6,000 p.e plus Compeny car end lergs Company benefite, including subsidieed restaurant, B.U.P.A., 4. weeks' holidey, etc. The position is London based but substantial travelling is involved. Assistance with relocation will be given where appropriete.

UNIVERSITY OF DEPARTMENT OF

1 LECTURER 1 COMPUTING OFFICER

Applications are invited for a post as SCTURER in the Department of Com-Julier Science, Specialisation required: authors design and implementation, authors design and implementation, proposed to the second of the second proposed of the second of the second publications and asportance. The accancy is available from Jast Sep-point to design of the second proposed to the second proposed proposed

Applicationes are also invited for a on an OEFARTMENTAL COMPUTING FFICER to develop and maintain destinated enforcers. Bores hardware operance an advantage. Seleny scale from October 1979: 14333-7521 plus superannuation), with placement of the property of age, qualifications and operand of the selection of the If he taked to hike up his posts as non-post as non-tice that the post of the post of the k star than 1s October, 1679, and k star than 1s October, 1679, Further periodists of both the above hate may be obtained from the posts of the post of th

TO £7,500 SYSTEMS **PROGRAMMERS**

INTERNATIONAL BANK -**EUROPEAN TRAVEL**

- * Low cost mortgage facilities
- * Low interest personal loans
- * Profit sharing
- * Free lunches
- * Free life assurance
- * Interest free season ticket loan
- * Non-contributory pensions
- * Free BUPA
- * Over 4 weeks' holiday

This small London-based team is responsible for six computer installations located in major cities throughout Europa. The team provides technical support to thase installetions on a planned and trouble shooting basis. Responsibilitiee elso includa, futura hardware evaluation, computer performance aveluation, software avaluation and the co-operation of systems softwere enhancement. Experience in Operating Systems is extremely important and any knowledge of mini-computer systems would be useful although by no means assential. In fact candidates with a good knowledge of computer systems software could find these positions extremely interesting with a wide and varied range of responsibilities

The positions offer an excallent income prackage, coupled with a progressive promotions system, based on merit. European travel will form an integral part of the job but would not be in excess of 10% to 20% of the time. It is also relevant that the organisation offors an outstanding package of lange

CALL NOW: CONTACT JACK COWDY ON 01-603 7335



विविधारतीया परस्य स्वाधि रिक्कृति

58 Pembroke Road London W8. Tolophona O1 603 7335/6 Telas: 26129

COMPUTER OPERATIONS SUPERVISOR-MANAGER/ESS

We are an old-established group in Shoplitting, Acclute total Metalwork, Jowellery Sarvices and Industrial Doors.

Ws have completed Stope II of our Bouroughs (t.tto) assails done and have been live on B.M.S. order processing for 15 econtlis and Conac. IIII: for 5 months. We have CMS lixed desk on order for delivery later this ying and we dear a computer room soparvisor to take ovar the duy-to-day control of the campater room and to see in CMS under the control of the Chief Financial Cantrollor. Hum is a computer room

Ideally you should be osed to working with Barraughs hardware and softwere and dealing with the day-to-day problems of hoth. There is plenty of acope for advancement as our "paneilled-in plans" envisage on nit line processing of our Bristol-based companies date next year

Banafits include 4 wacks' and 2 days' holiday, pension schoner, frea life assurance, sick pay schama, travel allowance and au beidisod chateen. Snlory is nagotiable as we are prepared to pay the right price for the right person.

Plsase writs, giving datalls of earesr, safary, atc., to:

Parsonnel Managar POLLAROS OF LONDON LTD. Highbury Grove, Lonodn. N.6

Management Services Manager Major systems activities include Databas

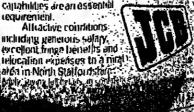
JCB, Europe's leading manufacturer of earthmoving equipment, require a data processin manager. His/her responsibility will be to control a department embarking on an ambilious 3 year Development and implementation Plan. The D.P. development will be centred around two large Honeywell L64 D.P.S Systems

encompassing all areas of the group

On-line Order Processing and some overseas innsibilities
The successful applicant will possess a fix demonstrable rocord of achievement precision including Systems. Manageroent in an established on line/Real time environment apariment apartment systems in the Computer Longity, and make years in the Computer Longity, and make the systems of Oatana Systems.

using IDS & shop floor monitoring and come. Real Time Systems, an 80 Terminal Network

o minimate and control all levels of Oata; Processing staff, Project Management and Com-captabilities are an esseptial





GERMANY

CONSULTANTS

Salerios £18,000-£25,000

Medical Systems

At least two consultants are required with a background in clinical laboratory systems, especially planmaceutical. A sound knowledge of processes and system configuration (burdware and software) is more important than specific machine experience.

Multi-processors

Several senior people are required with experience of multi-processor and system architecture design. A good knowledge of operating systems and associated software features is desimble.

16-bit machines.

Our client requires at least four senior consultants with network design experience and database development on 16-bit machines.

IMS expertise plus TCAM/VTAM

JBA is interested to talk with any senior people with detailed knowledge of IMS administration, installation or generation and maintenance. Also several senior positions are available for TCAM, VTAM, BTAM, or NCP specialists.

Word Processors

Two vucuncies exist for senior word or table processor design specialists who have 808X micro development experience and an intimate knowledge of latest technology. Contact: Mike Creamer

COBOL Compiler Designer

£7,500 - £10,000 Our client is an equipment manufacturing company with a growing customer

base in the UK, Europe and the USA. The company concentrates on commercial applications systems and maintains a apecialist software development group responsible for developing the software facilities of the

equipment.
Applicants must have experience of compiler design and COBOL and a background in a development environment, preceded by a degree course. The anccessful candidate will be personable and presentable and eager to enthusiastically contribute to a highly professional development group. Excellent employment package and high salary. Contact: Mike Creamer

Technical Sales Support Analyst

neg peckege c.£8,500 + car A majormini computer manufacturer is seeking to recruit high level d.p. professionals to assist in the support of government contracts. The successful appointees will possess an extensive software background, with emphasis on database applications. A background involving development of real-time operating systems, communications and programming in Assembler is ideal. There is significant scope for career development with this forward-thinking Contact: Margaret Stevena

Recruitment Consultant

up to £7,000 basic salery plus bonus Due to the continuing demand for our professional services, JBA are plenning to move to larger premises and therefore are able to expand our small, but

highly respected, team with a Junior Consultant. We are looking for a person with nt least three years in the computer industry, probably as an Analyst/Programmer, who has either the experience or potential to become a junior recruitment consultant.

If you would like to discuss the subject further, on an informal basis, then

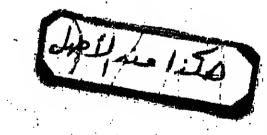
For further information on any of the above vacancies, please contact the appropriate consultant. For further Hammacon on any at the above vacancies, please contact the appropriate consultant.

If your qualifications do not match the above positions but you are seeking uther opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants, 16 Maddox Street, London W.1. Tel: 01-491 4478

!AMERICA! AMERICA! AMERICA!

PERMANENT OR CONTRACT OS/COBOL **UP TO \$30K** URGENT



3 1 2 1 1 1

Call Joanne Stone IMMEDIATELY on 01-278 6426 (dey) or 0865-773839 (after 7.30 and weekends), transfer charge accepted; or write to her at ACS Ltd., 37-39 Bowling Green Lane, London EC1R OBJ.

Applied Computing and Software Limited 12

COMPUTER MANAGEMENT — MIDLANDS —

MULTI &M GROUP TO INSTALL IBM REAL-TIME SYSTEMS

Two Management Opportunities — Negotiable Salaries, Cars, Normal Benefits

Our client, is an international, U.K. based group of companies with an annual turnover in excess of £250M. Operating companies are located throughout the U.K. and commitment to expansion Is likely to further increase an established European involvement.

The growth and success of the group, has led to a review of data processing policy resulting in a decision to install Real Time Systems based on the latest IBM hardware and software. The existing computer facility, a subsidiary company, will be expanded to meet the increased demand and two key Managers are needed as follows:

MANAGEMENT SERVICES MANAGER

This appointment will provide undoubted challenge, job Interest and good career potential. It will appeal to an energetic, resourceful and mature individual, aged 35-45. a Manager used to working within a group structure and with a ready grasp of the business implications of computerisation. Departmental management duties will be widespread and all embracing, whilst previous experience of Real-Time applications is essential based on IBM hardware. A discipline in addition to data processing will be welcomed as the appointment could lead to a board position in the subsidiary company.

COMPUTER OPERATIONS MANAGER

A dedicated computer professional with drive and enthusiasm, is required for this position. probably aged 30-35. A detailed understanding of Real-Time operational problems is mandatory and previous experience of IBM Hardware is expected. This is a key role in developing and building a strong team, which will be able to provide a high level of service to users in a critical area. Apart from purely technical matters, responsibility must be assumed for instituting operational standards, training, advice on hardware budgets, recruiting and staff assessments.

Both of the above positions will be based at our client's headquarters in the Midlands, within easy reach of town, country and moderately priced housing. Salaries will be negotiated at realistic levels, commensurate with the importance of the positions. Company cars are available and relocation expenses will be met where necessary. Please ensure that written applications are in sufficient detail to enable an interview decision to be made.

Positions opan to male & lemale applicants, places telephone (24 hour service) for Initial discussion or write to address below. QUOTE REF. CW145-9D



CAPP ASSOCIATES Computing Services LONDON AND MANCHESTER



01.686 9693 A.M.P. HOUSE, DINGWALL RD., CROYDON CR9 2AU

Project Manager from £7000 negotiable Cheshire based Have you got the drive to attack a new market?

if you've the experience we're lacking far, you'il ofready know Dataskli is one of Europe's leading software houses. What you probably won't have heard is that we've recently created o General Systems Unit at Wilmslow, Cheshire, talabtain systems. programming and aperations business on non-ICL machines.

New Market

The apportunities are enormous. And we mean to exploit them to the full. We plan to build the Unit Into a major market farce, designed to provide Cansullancy studies, general systems and programming, and staff hire across a controlled sector of non-ICL hardware.

How you fit in

We're looking for a dynamic professional with 8-10 years'

computer experience at at least one non-ICL mainframe (preferably IBM ar Honeywell). You're likely to already be a Project Manager, or with the potential to handle responsibility at this standard, and have had involvement in at least one major project at management level.

Although the Unit is based in Wilmslow, it covers the area North of Birmingham and South of Scotland, and you'll be involved in areas as diverse as planning, marketing, interviewing, staff management, contract negotiatians and presentations. At times the hours will be taugh and demanding, but if you're looking for something more than o desk-bound 9-5 routine, you'll find the rewards more than outweigh your commitment.

The salary is from £7000 negotiable, with expenses and eligibility for our 1979 Productivity Bonus Scheme.

Ring Henry Cohen, Manager, General Systems Unit, Northern Region, on Wilmstow (O625) 532631 ext. 35, or write to him at Dataskil Limited, St. Ann's House, Alderley Road, Wilmslow, Cheshire, SK9 IHQ, Please quote reference CW1401.

The Computer Professionals

esteration flaggy/years burnet, an open Wild 51 it 91-4116 8507

City of -Manchester

Department

Computer Programming / Auditor

£4,773-£5,568

(including £312 p.n. supplament)

Applicantly should be experienced in second interruption and programs. Experience in croug F18101 second by an intention person upprinted will be calcied two program employed and ground article. At 112 System 4. 72 Femiliates is acres which is to be open in doubt two years.

Application from from the City Transmer P II flow 314. Town Bell Manchester. M60 2311 quanting reference GAZEL or relaphone D61-230 3377 (Frt. 2076). Applicants reguring further information the post may due on them with the Charle Internal Audies M73. A Monton on Est. 2605.

losnig ilaio 25ili Juni 1079



COMPUTER SERVICES ENGINEER

Bristol Aerojet Limited ere designers and manufactures of rockel motors, rockel vehicles end underwater systems. Against a background of long-term government contracts we are continuing to expand and currently thave a vacancy for a Computer Services Engineer.

Duties will include the meintenence of existing computer systems and the district or continued to the conti

systems and the development of programmes for real ones plus giving assistance and advice to time sharing.

Applicante ehould Ideally be between 25 and 35 and have e strong methematics and computer environment background. A knowledge of statistics would be an

The Company is pleasantly situated on the Avon/Somerse border a few miles from the sea the Mendip hills and function 21 of M6. Working coldillow ere excellent and selary is negotiable; in addition productivity scheme is in operation.

Contact: Ron Molr. Personnel Managel

Management & Personnel Consultants to High Technology

£15,000 to £17,000 p.a. (average) PLUS CAR POTENTIAL to £20,000 + + + (fact, not fiction!)

DISTRIBUTED PROCESSING COMMUNICATIONS/TERMINALS MINI-COMPUTERS

NORTH-WEST & NORTH-EAST ENGLAND

Our client is internationally recognised and has an excellent reputation for products, support and service. Their customer base reads like the top of Timas 100 and Fortime 500 companies. Approx. 75% of business comes from existing customers. They operate a ona-for-ona support to sales policy so you gat axcellant back-up.

You will get an EXECUTIVE car and a top-class guarantea.

THEY ARE AFTER THE BESTI ARE YOU ONE?

Ref. No. JG 12.

I.M.P.C. (NORTHERN) LIMITED.

Austin House, Charlotte Street, Manchester. Telephone 061 236 7026/7/8.

I.M.P.C. (IRELAND) LIMITED 20 Upper Fitzwilliam Street, Dublin 2. Telephone 0001 7663 87. 0001 7665 43.

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD. 72-75 MARYLEBONE HIGH STREET LONDON WIM 4AJ.

WANTED

MPC LTD.

London W1M 4AJ.

Telephone 01-486 5644

72-75 Marylebone High Street

PROGRAMMERS

Casingstoke, Beckenham, Beckton, Borohemwood, City, Croydon, Edgwaro, Harlow, Havent, Hayes, laleworth, Islington, Portsmouth, Southompton, Southwark, N17,

RPG 11

Bury St Edmunds, Crawley, Green-lord, Halatead, Kingaton, Peters-

ASSEMBLER

Borehemwood, Chatham, City, Epsom, Herlow, Horfey, Maidenheed, Slough, Tadworth.

PL/1

Chetham, Chesham, City, Crewley, Oorking, Harlow, Tadworth, Wem-

City, Famborough, Horley, Maiden-heed, Morden, SW1

SYSTEMS

Besingstoke, Beckenham, City, Croydon, Harlow, Hevent, NW1, NW9, Southwark, Tottenham.

CONTRACTS

ICL COBOL Systems

South London, City. London, Essex. Landon, Middlesex. City, Middlesax.

REWARD!

Top conditions and rates for conscientious, hard working pro-fassionels. Why not enquire for more details?

RING MARTON 01-839 4169



MARTON ASSOCIATES

FOR PROFESSIONAL PEOPLE AT THE CROSSROADS

Sinte G28 County Buildings. Tralabay Suspice, WCS.

O1: 838 3169

PROJECT MANAGEMENT, SENIOR CONSULTANTS E.D.P. SYSTEMS

UK and abroad

UK salary up to £12,000 + bonus Generous overseas allowances

OUR CLIENT is a major software house within the British Computer Industry who continues to achieve both substantial annual expansion and increasing profit. Specialised, and highly skilled, professional attitudes are maintained at all levels within the organisation.

THE POSITIONS need mature, experienced individuals who can maintain and enhance an excellent reputation, whilst providing the qualities essential for leadership of project personnel within revenue objectives. Specialist areas include applications knowledge of the Oil Industry, nationalised industries and public corporations or experience of the development or installation of large operating systems.

APPLICANTS should be specialists in their particular areas and capable of ensuring that the resources of the company are made available to clients in an effective and efficient manner as well as demonstrating significant measurable achievement over the last two years.

FOR THE appropriate candidates, terms will not be a major

Write in confidence quoting CW 602 to John Hodges - Adviser to the Company

AMSTERDAM

A major manufacturing organisation wishes to recrult ANALYSTS and PROGRAMMERS to Implement both local and international systems on large IBM equipment. The modern offices, situated in one of Europe's most fascinating cities, are well serviced by an efficient public transport system that provides easy access to all parts of Amsterdam.

Full accommodation will be provided by the compony and assistance with school fees will be available where necessary.

ANALYSTS

£10,000-£15,000

PROGRAMMERS

£7,000-£10,000

To assist with the development and implementation of commercial applications the systems analysts will possess a good acedemic background coupled with four years' or more data processing experience, including formal training in systems analysis and design.

The successful applicants will have two years' programming to their credit (preferably COBOL) and have functioned es an analyst on at least one major project from feasibility to implementation. Team leader experience will be an added advantoge.

Programmers are required to join project teams developing a variety of commercial systems, in COBOL, on an IBM 370/158 operating under OS.

One position exists for a person with 2 years' dat processing experience, half of which will have been gained in a programming capacity using COBOL.

Applicants with more experience, particularly IBM OS knowledge, will command salaries at the higher end of the range.

Persons joining the company now will be required to stay for a minimum of two years, after which it is hoped they will continue to enjoy the high

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y IAA 01-353 0981 24 HRS.



OXFORD UNIVERSITY COMPUTING SERVICE

The Service rune a leige ICL 2980 + 1906A system with extensive communications and grephical equipment. Il requires the following stell:

DEVELOPMENT MANAGER £6182-£10087

Reporting to the Oilector, rasponeible for forward plenning and for overseaing the Heidwere end System Programming sec-

COMPUTER TEACHING OFFICER

£4232-£7145 ar £6827-£8452

To teach computing at all levels with particular amphasis on microprocessors.

SYSTEM PROGRAMMER

£3688-£6108 or £4232-£7145

To maintein VME/B and implement minor enhancements. Salaries will be increased by 6 % pluse cost of livingsword from Salaries will be increased by 6 % pluse cost of living ewerd from October, 1979, Enquiries, Turthor dateile and epplication forms from Official Secretary, 13 Banbury Road, Oxford, Tolephone Oxford (0865) 58721 for further details.

QUEEN MARY COLLEGE University of London

DISTRIBUTED ARRAY PROCESSOR SSRC PROGRAMMING AND APPLICATIONS SUPPORT POSTS

The OAP Support Unit is being learned in OMC Computér Centre to lester rescerch en. produce self-were for and edition uses of the ICL Distributed Array Promissor. The Social Science Research Council is lunching 2 posts in the Unit for an initial period of 3 years.

t] to work on besic algorithms in sorting and searching large date sets, and stansified data reduction. Candidates should preterably have a degree and postgradueto qualification in Computer Science and proven competence in the devalopment and documentation of software. Appointment in range £6886-£8452 p.a.

2) to oci as advisor to Social Scientists wishing to use the OAP. Condictors should have qualifications in other Compute Science or a Social Science and must be experienced in the application of computers to the Social Sciences and the application of large scale data processing systems. Appointment in range £8182-£10097 p.a."

plus £502 london Allowanco. Salary review dira Octobar, 197S.

Application forms obtainable Iron The Registral, Oueën Mary Collags Alile End Road, Lendon E1 4NS, to be returned by 22 Juns.

DIAMOND

OFFER SALES CAREER OPPORTUNITIES

Dotu Recall Limited, which designs, monufactures and markets the nll-British DIAMOND Range of Word and Figure Processors continues its planned expension progromme with new Sales Offices in Dorking, Birmingham and Harrogate.

Career opportunities for additional Sales Personnel. particularly in London and the Home Counties have arisen, offering high income for experienced opplicants who are prepared to work hord in the conversion of enquiries into DIAMOND users.

The First Claas package includes:- A high bosic salory and commission, prestige car and expenses, 4 weeks' annual lenve with pension and BUPA schemes — plus the opportunity of eorly promotion to Area Sales Manager with the support of an enthusiastic and professional organisation.

Should you wish to be considered for a position that could dramatically improve your career prospects and income, then forward your curriculum vitae to:-



Charles Boyle, Sales Director, Data Recall Limited, Sondes Place, Surrey, RH4 3EF

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbay for further details on 01-281 8018.

South East Thamps Regional Health Authority

PROGRAMMERS

Distributed Processing Systems Soals 9 £5,313 to £8,379 [milur roview]

Scale 4 £4,775 to £5,680 (under roviow) Programmers are commend to week on the development of

Programming are implicible to wrick in the development of Sallwote and Production proprieties for perchated Processing systems. Two Rocklon URSC systems are installed in our Empedan Control at Landard and before symbol country terminals and printers will be bestalled like your. The systems will be not put of a computer obvoid including a Thick 1904; manning mader George Band less 101-2004.

Iwo ICL 39144.
The justs require expension and knowledge of ICL 1900 software, including knowledge of Guarge III. Training on R850 systems will be provided. The Controls sutrated in the provided to the England and Castle. It is accessible by public tensport and from an early facilities are evellable. For fettius infrancement and an application form fetuments within two weaks of this advantament oppositing tolephone a write to The Regional Computer Services Officer, South East Thinnes Regional Computer Services Officer, South East Thinnes Regional Health Authority, Regional Computer Control Bruck Orive, London SE11 4TH, Tol. 01-735 00/1 Ext. 36.

SYSTEM 3 **OPERATOR**

Wine and spirit shippers situated in NW10 ere seeking en experienced operation for their IBM System 3 Model 15 computer, which will shortly be upgraded to Model 15D.

The successful epplicant will ideally have gained CCP experience controlling remote end local terminals and communicating IBM 3741 punches.

Single shift work 9,15 a.m. to 5.15 p.m.4 Mon. / Fri.

The System Operator will possess in the itiative and be prepared to assist in the other functions of the D.P.D.

Holiday arrangements will be honolife.

Salary £5,00 £6,000. Contact: Mr. Kardos 01-459 8011

PMS



ANALYSS: Contract of the

ANALYSSES. KUNNAST AND

MANAGES SALS

The EMS Boile Chaite, concentrating and a large glowing lumbry blacks, angenty needs expansional Analysis, and Programmurs to socion a sude veedy of decodingment progress. All developments so not a sude veedy of decodingment progress. All developments seeks secured a sweeping range of applications systems bested to edited and mero computers, annualizing the trained progressian the red systems bested to edited and mero computers, annualizing the trained progressian the red systems per constant progressian the standard progressian manual and Newspape Groups. Can Ostatable as a term to be trained by delicit study unique opportunity by all thermorphism based study of severalizing to make an his Millands as prices a principlens. Liquid out applicated efficies analymentally to recommend to the progressian secured of the study and the study and study promises of recomment opportunities are excellent with early promises oversite assured for motivated shall began to help our company progress assured to motivated shall began to help our company progress assured to motivate all bases to help our company progress awards a field-deading prismon during the next leav years. Candidates well be occupied from all ranges of backgrounds. Any main sense will be considered Wis with an one appropriate Burmoss apportant, wa will give you pub interest and a luture in addition, we relieved for all about and about EMS has the most emposate Our evention or and about EMS has the most emposate Quit ovention of these for these or three or five or progression of the for three or from you have sourced Unit Science or foods of where for three or for the progression of the Consideration of the country Telephone us today for an early uniterview of where for three or for three or from you have sourced Unit Science and Consideration of the for three for three for the order when you have sourced Unit Science and Consideration of the for three for the order of the formal countries.

We need a constant range of uspennicul Analysts and Programmers to work for the leading Kuwani

consultancy on a serios of projects with a wide variety

of clients.
Users include State Ministrius, Oil Compenies,
Benks, Car Distributors, Trading Groups and
Bursaux, Preference will be lin carridates with some
IBM experience, also COROL programming lack-

ground. Any specialised experiments such as CCS. IMS or Mini Computers would be especially welcome. Due to accommodation casts, juderonce will be single or married capitalisms with no children.

The maximum number of children acceptable to the client will be two. From Intrustried accommodition will be supplied in addition to attractive tax-froe solarios.

car ellowances and five weeks partl leave each your. Good opportunities exist to save money and nagey o

esoneblo activo social libi

A. P. A. G. G. G. G. C.

机压成性 医克尔特 医静脉动物 化二氯甲基 ·奥尔尔维斯

On clients, a leading international software house, are seeking additional Project Leaders, Systems Analysts and Programmers to help meet the evericuasing requirements of their clients.

They are particularly interested in progremmers with 2 years experience of IBM 370 COSOL, Assembler at RPG and progremmers with ICL new range background. Systems Analysis with ICL progremmers. ming background in COBOL are else urganity re-quied Prelatonce will be given to Project Leeders with IBM or ICL background.

If you are interested in linding our more about these outstanding opportunities please ring OON PHILP on 021-454 7906

MINER OF ACEPTAGE AND THE up % 07996 651 11 53 681615

Our clients, a mejor benking organisation, currently require Systems. Analysts and Programmers of all levels to work on the development of an integrated detebase oriented on-line real-time system based on a Univec 1100/82.

The development of this system reflects on client's intention to retain the lead on the provision of personal banking services.

In addition to guaranteed job setisfection for the luture and attrective seleties, our client offere extremely generous Iringe benefits including flexitime, a House Purchase Scheme and contributory pension scheme.

If you are interested in one of these excellent opportunities, please telephone CAROL PROUGMAN on 0782 623665.

Photogramme :

WE SHARLING COMMUNICE

We urgently require a significant grientity of ex-We urgently require a significant greentity of experienced analysts to work in a consulting team environment essigned to major client sites. Cendidates should possess at least three years precitical systems experence, and be capable of working on systems expenses, and be capable of working on municating both with users and the client OP loams.

Equally, the ability to fit into taems with client stall will be important as many projects incorporate the will be important as many projects incorporate the provision of extre resources to assist in meeting targets. A wide veriety of interesting projects are available. Excollent seleries and fringe banefits are evailable for suitable candidates. Alt onelysts seaking eny positions in the North-West should contect us without delay. We have an univelled range of

Consultani. Oon Philp. Telephone: 021-454 7906.

the first of the case of some present the community, MixIII is gimed. Manager and an artists of the year The second of the Company of Combin 2011 Company

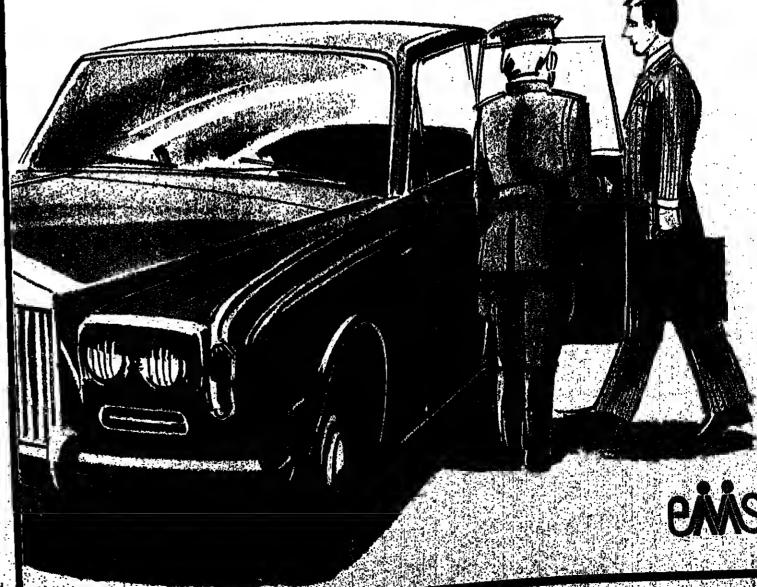
and the same of the surface of

Baryon the real Dimeson (H Baka / Gerabber Ches Lussoni.

- IBM Analysis - - Banking -- London. TIMS have a fully Computerised contracts data bank.

Tursue you're on file for the wide variety of contracts we'll be offering from now or words.

Telephono today lor an application form John Wood, 0782 623666 Chair Acul manifes in no in was hopen to the country and the



Experimined Salesmon are in high demand throughout all partions of the Data Processing Industry. So many companies now have requirements that you need your own corepuler nowadays just to keep track of where the best opportunities exist for you

AND E.M.S. -- E.M.S. ONLY -- HAS JUST

E.M.S. has hundreds of vacancies at any point in time for expenserical Salesmen. Exceptional opportunities can be gained the professional salesman's way. By completing a cerool form with E.M.S. and loning its provide the jobs for you. We assure you of opportunities unrivalled throughout the market Just telephone today for an application from from E,M,S, and we will open both the product range and salary structure you are looking for within one to tell days of receipt. It is the most revolutionary system in the world. Telophone E.M.S. today for a Sales Career Form and see how fast we get results for you. How do you know what you are worth until you have fried E.M.S. They have even named The European Monetery System after us. Follow that lead!

Phono: 021-484 7906 or 0782 623665; or F M'S Dota Contre Tricom House: Horriey Ro

ADVANCED COMPUTING AND APPLICATIONS PROJECTS

SCIENTIFIC CONSULTANCY LONDON AND SCOTLAND

£5,000 - £9,000

You've got a good degree, a commitment to scientific computing and a desire to work at the forefront of technology.

You've got independence and initiative and you feel ready to enter consultancy and capitalise on your experience in any of the following fields.

NAVAL AND MILITARY APPLICATIONS, SONAR AND UNDERWATER COMMUNICATIONS, SIGNAL PROCESSING, OR, SIMULATION, NUMERICAL ANALYSIS, FIRE CONTROL SYSTEMS, COMMAND AND **CONTROL**

You will have some computer experience, typically in —

REAL-TIME MINIS AND MICROS, CORAL, FORTRAN, ASSEMBLER, DATA ACQUISITION, DATABASE DESIGN, SCIENTIFIC COMPUTING

You'll join a new London based consultancy, part of an established group, set up specifically to provide expertise in these areas, and thus these are ground-floor opportunities enabling rapid career progression to team and project management positions. Apart from London based posts, projects in Scotland and elsewhere in the U.K. offer significant responsibility and attractive benefits.

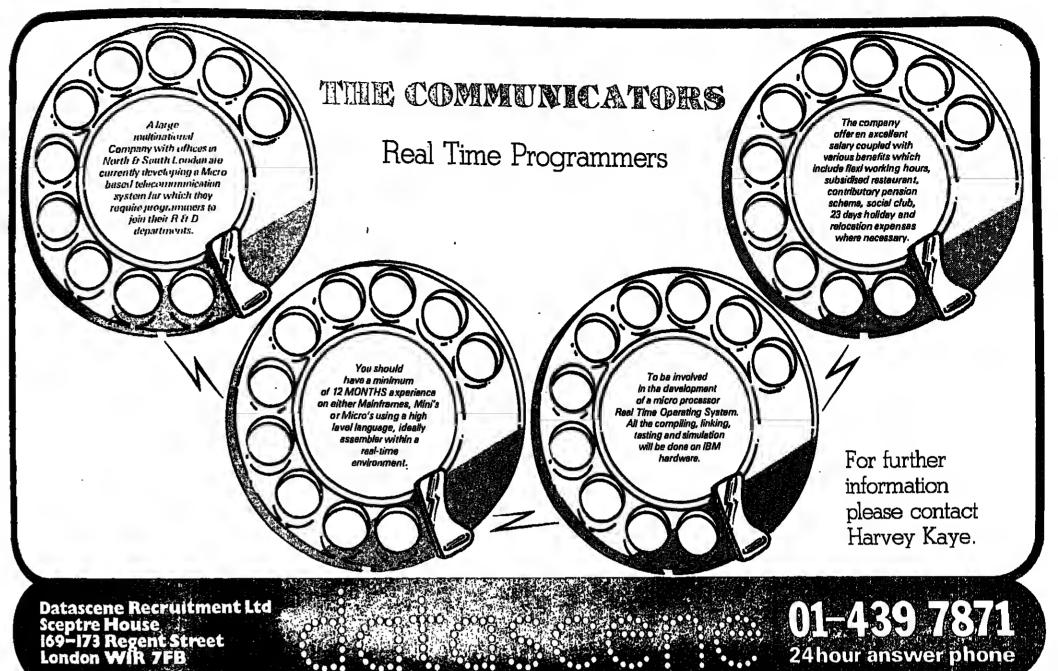
Contact MARK IRENS for a confidential discussion on how your background matches the projects you are likely to work on, quoting reference CW/169/4.

HUTTON EXECUTIVE SELECTION LTD. HUTTON HOUSE, HUTTON STREET, LONDON EC4Y 8HR

JOHN GIER WILLDET, JUNE 1, 1979

TELEPHONE: 01-3537141 (24 HOURS)





Checkout the new leadersliterally

Tesco have one of the most up-to-date computer installations in the country: the IBM 3032, plus laser printers, plus Mass Storage System, plus a lot of other exciting peripherals.

What's more, we're using this hardware effectively, devising programmes that actually work in management terms and lead to greater efficiency, more rapid reaction to market and marketing factors and greater profitability all round. And this, after all, is what computers are all about.

We are now looking for two reasonably experienced people to overlook our systems, with varying degrees of responsibility:

As a Systems Assurance Officer, you would be directly involved in ensuring all programmes currently under development are secure and efficient, and be responsible to see that interface and recovery/restart Procedures are adequate. To do this, you'll

need solid experience in programming and program design, preferably including on-line and database facilities

As a **Systems Audit Officer**, you'll be doing much the same job, but on an on-going basis, acting as advisor to Development Teams on Audit requirements at all stages of development. But you will also be respons ble for seeing that management controls are regularly reviewed, and that the physical environment of the hardware itself is also adequately controlled. This obviously needs a wider experience, including systems analysis.

If you want to work for the new leaders in computer applications in either of these two positions, you'll need to be of graduate calibre. Convince us of that, convince us of the fact that you are seriously seeking more responsibility than your current position can offer and you're on the way to join



starting salaries and full fringe benefits, including re-location expenses to the beautiful Lea Valley area where necessary.

For more details and an application form, contact Fred Rayers, Tesco Stores Ltd., Tesco House, Delamare Road, Cheshunt, Herts. EN8 9SL. Tel: Waltham Cross 32222.

> OTESCO the new leaders...

MINIMUM 2 YEARS' EXPERIENCE COBOL, BASIC or PL/1 WEST LONDON BASED TOP MINI-COMPUTER MANUFACTURER ALL DEVELOPMENT WORK WIDE VARIETY OF APPLICATIONS

THE OHO-FILEWAY FOR MAINTENANT OF (Higher for Telecommunications experience)

A FIRST-CLASS OPPORTUNITY TO JOIN A BRAND NEW DIVISION OF A WORLD WIDE COMPUTER MANUFACTURER WITH EXCEL-LENT OPPORTUNITY FOR RAPID ADVANCE-

To sey this is the best opportunity for young programmers we have handled in recent months would be a gross understatement. Competitive Initial salary. excellent opportunity for enhancement of experience and to learn new techniques end equally excellent promotion opportunities ell add up to e truly worthwhile job. Our Clients offer ell these things and

YOU OWE IT TO YOURSELF TO INVESTIGATE THIS FURTHER AND THIS IS SIMPLY DONE BY TELEPHONING ME, BOB BOWER, A.S.A.P. QUOTE REFERENCE CW/169/1.

(PART OF U.K. MANAGEMENT TEAM) MAJOR MANUFACTURER WEST LONDON

65000、681366 WHOLLY DEPENDED ON LAPINED CO.

This key position is immediately available and we feel it presently represents one of the best opportunities in its field.

8-red in West London, the position is primarily responsible for Customer Training, internal induction Courses, Sales Training Courses, and running the Company's Users' Group. The present facility consists of approximately ten staff and a budget of over £250,000 with a planned growth to thirty staff and a £750,000 operating budget within 2½ years.

Clearly, since the position is part of the U.K. Management Team, we seek a high calibre individual to fill it. With direct reaponsibility in the areas of people, resources, administration and business and a reporting structure both locally and into Europe, the personal qualities and track record of the successful candidate will be outstanding. An excellence in communication, appearance, manmanagement, negotiations, judgement and principlea is n pre-

There is a detailed job specification evailable reflecting the importance our Clients attach to this position and interested cardidates should telephone the Advising Ofrector, BOB BOWER, as soon as possible to arrange for a mutual interchange of information. Since there is a fair degree of urgency candidates are requested to talephone in the first instance.

PROGRAMMER/ANALYSTS

With 2 years' experience

MAJOR IBM SYSTEM 34 DEVELOPMENT PROGRAMME

- I-I Subshilary Companies to be Computersed (UK & EUROPE)
 Manufacturing Environment using HMCs MAAPICS System
 Applications Order Futry, Inventory and Production Manages
- * Occasional Overseas Travel 18-10 weeks p.a. with Weekend User Company Contact - Liaison Position of Full Responsibility

Our Client, the European Headquarters for an American multi-National manufacturing comporation listed in Furture's Top 500 with an annual turnover exceeding \$750M and known for their high technology products in the hydraulies field, require Programmer/Analysis with at least one year's RPG II program-ming experience to join a small project team involved in the development, extension and modification of IOM's MAAPICS system to encompass the arbive listed applications at their Walford offices with subsequent commissioning of IBM System 34 computers in 14 of their subsidiary companies located throughout the

Applicanta with sound RPG II and perhaps knowledge and/or experience of IBM System 31 and MAAPICS must be able to organise user companies in the implementation of their computer facilities and systems, 'four duties will include site preparation files preparation, staff training, systems cut over, and all liaison as necessary during the implementation period. Reporting to the European Duta Processing Manager, you will have complete autonomy and most be able to rope with all aspects of establishing an 18M System 34 far du v.

RPG II Programmer/Analysts wishing to further their career on INM System 34 and possible System 38 in the future, and who are willing and capable of accepting responsibility at a senior level should contact. Jim Fort minied intelly for complete details and a confidential interview with the client.

DON'T MISS THIS OUTSTANDING OPPORTUNITY - RING NOW DUOTING REF CW 100/30

GROUND-FLOOR OPPORTUNITY

for young, bright, energetic and ambitious

PROGRAMMER

for an expanding Internetional Communication Company for its London Office.

The company is in the process of installing a sophisticated communication network between 3 continents based on IBM

Suiteble epplicant should be prepared to trein (outside the U.K.) by softwere house implementing the programmea with the view of ultimetely being able to meintain and change programmes independently.

Previous IBM Series 1 EDX experience is an asset but not a

Good salery, prospecta of fast promotion, long-term potential to become head of department. Travel abroad and other fringe benefits offered to the right applicant.

SOUNDS GOOD?

Ring Miss Harris at (01) 937 6062 for appointment, or write to

Consortium Communications Internation; inc. 59/61 Kensington High Street London, W8

Software **Development Opportunities**

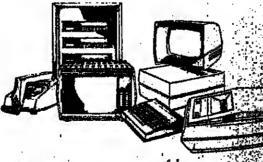
Team Leader Two Senior Programmers Two Programmers

Racal-Milgo Limited, already the world leader in the Data Communications field is actively engaged in developing a number progressive new products which will maintain its market position in the 1980s.

As a member of one of our small expert teams you will be deeply involved in these important developments. Acomprehensive training in modem Data Communications systems technology and protocol techniques, including X25, will be given to you. Contact with microprocessors is inevitable.

For your part you will be offering PDP Macro II experience end you will have used one or more high-level languages. Any systems progremming will certainly count to your advantage. These positions offer first-class

opportunities for directly entering one of



the most interesting areas of the communications revolution and will command an attractive salary and benefit Write, in full confidence, with brief details

David Kichenside, Personnel Officen Racal-Milgo Limited. Prospect House, Thorn Street, Reading Berkshire or ring Rending (0734) 5953

Britain's fastest growing electronics group:



ab minicomputer special

Working in minicomputers has special advantages — 'ecross the board' involvement with interesting applications and industries — better career path options particularly at the senior levels — training in up-to-date techniques, lenguages, etc., thet will stend you in good steed for yeers. Our consultants are in regular contact with all of the recognised 'mini' companies — six are feetured below — and applicants that we have introduced to them tell us we're right.

CUSTOMER ENGINEERS

(Start £6,000 + Overtime + 2 litre car)

Fsbulous opportunity to join a leading msnufacturer of a wide range of prestige mini computers and peripherals. Excellent prospects include above average growth 143% increese in turnover plus two new branch offices plus 21 new product launches, all in the last year). Helpful friendly young management.

Bssic sslery £6,000 plus overtime plus luxurious 2 litre car plus training. If you are ambitious, feel cepable of essuming responsibility, why not take thet all importent step forward — it living in London, Home Counties, Midlands, West or North cell us today but hurry ... Rel. EK2014.

STOP PRESS

THE TOP micro-maker offoring exceptional benefits package for minicomputer Ref. EK2137.

SENIOR **PROGRAMMER** £6.500 + bonus + choice of car

Our Client, e successful hardwere end systems company with en impressive customer bese enjoys e good reputation supported by a comprehensive product range. They offer a fabulous opportunity to en ambitious programmer (pref. Beeic) to develop on line applications. Besed in Kingsion or West London, you will have lots of veriety and contact with people, only limited travel end plenty of scope for personal edvencement. Nice people. generous (exceptionally low stelf turnover), superb working conditions (sometimes work from home), you will ettend training courses. £6,500 + cer + prolit shere. Ring for further details now. Rel. CC613.

SOFTWARE **PROGRAMMER** 6K+

Woking based company merketing minis to commercial users, offers great opporunity to self-starters with ASSEMBLER working on Filo Management systems. communications, etc. Friendly young collenguos. Free car park, or station just up the roath, it petrol runs short!

SALES **EXECUTIVES**

£17,000 + Car

Our client, one of the New Leeders in the Mini-Computer field, who during 197B: Broke the \$100M berrier. **Coubled their Customer Bess**. **Built 2 Major Fecilities.** are offering exciting opportunities in the South to embitious Sales Executives. If you need: Besic Selery c. £7,000 Eernings Guarentee

Realistic Quotes Generous Commission (on quote £17.000) 2 litre cer

Comprehensive Treining Unrivelled manegement opportunities Then cell today

Ref. CS1146.

ROSSENOALE

CHESTER

LIVERPOOL

SENIOR PROGRAMMER

COBOL PROGRAMMERS

ANALYST/PROGRAMMER

COBOL PROGRAMMERS

SYSTEMS ANALYST

ASSEMBLER PROGRAMMER

ANALYST/PROGRAMMER

epotications programmer to work on latest

MANCHESTER

WARRINGTON .

LIVERPOOL

CONSULTANTS

£8K-10K

Our clients — e world-wide minicomputer compeny - ere building up a newly lormed teem to hendle one-off user requirements. You will be meeting people in a veriety of different industries, you will heve opportunities to travel if you wish. This is a superb chance to apply your commercial systems background in a multi-discipline role - pre end post seles support, enelysis end design proposals, project-menegement, etc. Your S&P background will determine the salary

The Company is based in the Meidenheed-Reading area with good trevel to London and the West Coast.

Promotion will come easily for an echiever — if you are ready now, see below

STOP PRESS, URGENT

EUROPEAN M.I.S. MANAGER

c.£10K + benefits Meidenhead / Reeding area.

Rel. CA766.

ab executive (kingston) to 01-549 1441-

GORKSHIRE& NORTHWEST ANCIES

In order to essist you in finding e suitable position from one of the hundreds of LOCAL VACANCIES throughout Yorkshire and Humberside which are currently registared with us we have arrenged the following informel evening

interviews next week: Monday 11th June Norfolk Gardens Hotel, SHEFFIELD Tuesday 12th June Grosvenor House Hotel, Charter Square. HULL Wednesday 13th June Centre Hotel, Paragon Street. LEEDS Thursday 14th June Dragonara Hotel,

Neville Street. If you are an ANALYST/PROGRAMMER, PROGRAMMER, SALES PERSON, FIELD SERVICE ENGINEER, CONTRACT PROGRAMMER OF OR M. ANALYST then come and talk with us any day between 4.30 p.m. and 9.00 p.m. We can help most of the people who contect us (with at least 8 months real experience) to find a more revisiting and higher actions (with at least 8 months real experience). end higher peid carear. Come along and let us help you - we're looking forward to

LORIEN COMPUTER SERVICES Recomment OCS House,

Servia Road Leeds 157 Wil lelephone 0532 444185

123 1444 Ansaphone service:



ANALYST/PROGRAMMER

ANALYST/FROGRAMMEN
If you have over 12 months COBOL experience out
client will be placed to hear from you. Friendly
installation, committed OP user. Gir-shead commercial organisation is seeking a COGOL Programmer with 3 to 4 years experience to lead small team. Variety of stroubing systems and user contact. STOCKPORT COBOL PROGRAMMERS Young COSOL programmers are being sought by one of the leading UK organitations. Excellent working conditions lerge systems and herdword. Experienced COBOL programmers with some ASSEMOLER, are required to write application software and packages to minis. With Software House offering

NORTH CHESHIRE SENIOR PROGRAMMER

IOM System 3 user requires on Analysi/Programmer with a sound RPG II background. User lielson and opportunity CO60 L experience £4700 · £9000 CHESHIRE REAL-TIME PROCESS CONTROL Leading consultancy is seeking further stolf with Real-Time Process Control background. Knowledge of CORAL

Well crebilehed organisation needs programmers with a veriety of experience to meet organism. An opportunity to work on large TP systems with the letost Octobase techniques. ICL 1900, 2900 or System 4 background 10 £2000 PROJECT LEAGERS Our citem needs Project Landers with in depti A Systems Anglyst with sound manufacturing systems ackground to work on IGM hardware with a well £5000 £6600 ST. HELENS SEN PROGRAMMERS & SEN ANALYSTS

to £6000 Simply one of the best companies in the Ninth to work for are expending again, 16M, COBOL, IBM De experience Career prospects availlent. Phone STEVE SYKES on LEEDS 4441B6

(deytime) or on LEEDS 662417 (evenings or WARRINGTON
RPG II ANALYST/PROGRAMMERS
6 15800 - Benefits
6 15800 - Ben weekends), or write with brief details (no stemp required) to Lorien Computer Services, FREE POST, Lsads LS7 3YY .-

£5000. "If you're considering a move then you. should contact Lorlan first"

LORIEN COMPUTER SERVICES

Servia Road, Leeds LS7 IN Telephone 0532 444185

Recruitment Consultants Ansaphone service)



SURREY SYSTEMS MANAGEMEN

distributed processing, inter-office message switching and the like, has encouraged our client to establish an ambitious, but realistic modernisation program throughout their widespread

The company, solidly based in the insurance industry, are already experienced computer users, but the recent rapid growth and development of the data processing function, creates the need to appoint two senior people in the systems area.

SYSTEMS MANAGER

c.£10,000 + Car

The successful applicant will be personable and mature, aged 35-45, with a good knowledge of general insurance, preferably from the broking aspect.

There must be evidence of a proven track record in the systems area, management experience and an ability to achieve results. An appreciation of current IBM hardware and software facilities is necessary to ensure a close relationship with the technical section.

Systems are specifically user driven, both in respect of improving management productivity and in the automation of cierical functions, therefore, a sound business awareness is extremely Important in the daily control and direction of the systems department.

PROJECT LEADER

£8-9.000

He/She will have many of the attributes required of the Systems Manager, Ideally with a similar background of general insurance related systems, and again preferably from the broking side. The position requires a deeper understanding of systems technicalities, but business skills and user empathy are equally Important, coupled with enthusiasm and a sense of urgency to complete projects. Previous experience of project leading at analyst level will be expected, particularly in an installation based on IBM hardware.

Our client is intent on expansion and efficiency throughout the group. The commitment to lead their field, will mean a high level of challenge and job interest for many years.

We would stress again, that candidates for both positions must relate closely to the user departments in developing and implementing the new technology.

Written details must provide sufficient information for interview assessment to be made.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW146-9H







01.686 9693 A.M.P. HOUSE, DINGWALL RD. CROYDON, CR9 2AU

VICTORIA APPOINTMENTS LIMITED 🗘 🛆

OPERATIONS MANAGER

Salary c. £6,500

Our Client, a leading company in the Transponalian field, is leaking for an Operations Manager. It is enticipated that the successful candidate will be eged over 25 years and educated to 'A' level or equivalent. He/She must be abte to demonstrate organizational ebilities and have strong supervisory and management experience, preferably gained in a maintrame/communications environment.

The Department has a large mainframe surporting a sophialicated communications network of entry scape for a self-starter able to keen abreest of now techniques to use his initiative in this

Miss Val Halliwell, Victoria Appointments lamited, 24 Mesley Street, Manchester 2, Telephone 061-236 7319 (24-hr. Answeiing Service) and 061-236 7417. Home 061-440 8134.

** DISCOVER AMERICA **

FROM NEW YORK TO CALIFORNIA

LAMSDA TECHNOLOGY INCORPORATED, e leeding computer services peny is seeking quelified individuels with en edventurous spirit for unique tomporery employment opportunities (one-two yeers) et our New York, Sen Frencisco end Los Angeles offices.

We require individuals et all levels of expertise in any of the following:

- COBOL, PL/1, ASSEMBLER
- MINI/MICRO
- IMS DB / DC or similar bese techniques

Solaries are fully ettuned to experience, beckground end ability.

We ere truly interested in youl If you ere interested in us, epply by sending your resume in confidence, or telephone.

Mr Tony Stornfield, Director Lambde Technology Incorporated Suite 500, Cheshem House 150 Regent Street, London W1R 5FA .. Telephone: 01-439 6288

Find out what is happening across the Atlantic. Contact Tony, Blomfield, an, Englishman working in the U.S., who can talk to you about the available opportunities in America.

SYSTEMS/SOFTWARE/ PROGRAMMING

ord, with an improssive number of existing cients, is tord, with an impressive number of existing trains, is now planning to expend ite present level of businuse. Successful applicante should be willing to visit user tocatione, and also have the ability to converse well and communicate closerly. Excellent company from afits are provided, togother with good prestrocts for promotion. Two people are immediately required:

ANALYST/PROGRAMMER

You should have a good background in cammercial programming, be able to write commercial systems spece, and preletably have a knowledge of relation computer systems. You should also be a vehicle owner, for which there is a company use reimbursement echams. Rel. 73b.

ou should have some experience of Assembler or ether low-level language, and possibly a bockground in commercial applications. It would be adventageous to have knowledge of Floppy Disk, VRC or VOU systems. Also an apportunity to be trained in Cobel II necessary. Ref. 73s.

Applications in strictest confidence to:

Bedford, MK40 3HR Tal: Bedford (0234) 48877

Employment Agency Licence

PROGRAMMERS' & OPERATORS

FREE LIST ALL AREAS The bast CHOIDE of a computer Appointment

HP 3000 IMAGE £250 p.w 01-262

2251

actascene

SAUDI ARABIA 2904 - COBOL

4 to 6 WEEK ASSIGNMENTS SALARIES TO £325/WEEK

PLUS ACCOMMODATION PLUS TRANSPORTATION

PLUS AIR FARES

PLUS MEDICAL AND RECREATIONAL FACILITIES

Have you always wanted to work in the Middle East but Dean But all by long form

This is the best opportunity you will lind.

if you have at least two years' 2904, COBOL expendence, and would like to explore the Kingdom for 30-45 days.

BOB EDWARDS

Datascene International Ltd. 01-439 1856

FORTRAN

ENGINEERING SCIENTIFIC BACKGROUND CONTACT US, THE SPECIALISTS IN THESE TELD

lobs from C3.500 to C8.000 in all areas, Phone in

MANAGEMENT & **EXECUTIVE SELECTION**

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS. (June 8, 11, 12, 13)

We have the know-how to develop the world's biggest asset.

PEOPLE

Without the right people the job doesn't get done and . . . without the right job, people don't get on and so on the following nine right-hand pages

you will find the outstanding opportunities we have been retained to advertise and select for, in

- * SALES and MARKETING
- * ENGINEERING SUPPORT
- * SYSTEMS and PROGRAMMING
- * TECHNICAL DESIGN

MANAGEMENT AND EXECUTIVE SELECTION WORKING FOR YOU

Suite 201-6, Albany House, 324 Regent Street, London,



ALL AREAS Nanous long end short term contracte nowl EXCELLENT RATES — Ring Sue, June or Jane VARIOUS, SHORT TERM CONTRACTS Operations staff required to cover immed, holiday requirements: London and UR. Call Jana, Sue or Juna now los further details ICL 1600 G111 OP Long term contract. £130 p.w. + bonue. Phono June, Jene or Sue for lurther details. ISM 380/MFT II HASP OPE DUSLIN Long and short term contracts. July start. To £160 ρ .w. nett Call Sue, Jene or June now! Immed, stert. Split dey ehlft. £125 p.w. + bonue. Ring June, Jene or Min. 1 month contract, Immed, stert. £140 p.w. +. Cell June, Sue or Jene nowl., '

We are looking for

Phone anytime, or for an application form leave your name and address with our answering service.

Knight Computer Services Ltd...

14 Old Park Lane, London WIY 4NL.

REAL TIME SYSTEMS

DAI is a systems house specialising in mini/micro computer besed eutomation. Our success in the last eight years has been schieved by employing capable people in this specialised tield.

ANALYST/PROGRAMMERS

MANCHESTER/LONDON

DAI offere cereer development in a successful and

profitteble environment where individual telent is

rewarderd. You are given opportunities to incresse

your responsibilities and in come while working on in-

On top of basic salary DAI employees share in

ASSEMBLER

£260 p.w.

Applicate aband have a universi bigher degree and provide ordinate at teaching and ensured standility. Quides will include undergradules and gradule teaching and research involvement. Same prefessate entitle, the regularests with caperising in universe and theory lived paperts of caperising in universe and theory lived paperts of caperising in universe and theory lived paperts of caperising in universe.

Vacancles also exist in our Frankfurt office.

Please contact:

Ms. P. Hewitt, Alpha House, Rowlends Way. WYTHENSHAWE, Menchester M22.

teresting projects.

company profits.

Mre. C. Ewing, DAI Ltd. Axtell House, 24 Warwick Street LONDON WIR 5RB.

Tel: 061 436 3122

Tel: 01 734 5488

IBM OS

£240 to

01-262 2251

CHOOL OF ELECTRICAL

LECTURER COMPUTER SCIENCE

openium et lagragueret.
géochtien, clean 7 frip, August, 1870.
il fallemation abnet conditions et angelepenent,
il mobbe et opplication une de abtalont tran
in Actorighte au Commonwealth (Intervention
opén.). 35 Gorden Square, Landen MCCH SPF.

IBM BAL

£200 to £260 p.w.

01-262 2251

OPERATIONS OPPORTUNITIES

We have an increasing number of valiancies for programmers with experience of IMS. If you have those skills and would be available to start

work at my time in the next three months, a cull to Nuil or Richard at one

If you don't generally do contract work you may still find that we cancile you some interesting alternatives. And we're part of the BOC Group - bg

Cell Richard Kaluzynski, Ned Williams or Suzy Gillam for details.

First Choice

Programmers

S. CDAST MIDDX. N. LONDON

LDNDDN

PARIS/HDLLAND

for

HONEYWELL L61 COBOL

PDP FORTRAN/ASSEMBLER

IMS Experience? Earn up to £12,500 p.a.

Knight Computer Services Ltd.,

Statt Services Communicat BCH (Contigues to Contigues to Co

14 Old Park Lane, London W1 (4) R

ICL GIII COBOL

ICL ANALYBTS

OVERSEAS

+ REALTIME MAINFRAME COBOL.

* Internetional Bank

* London based

* Low interest mortgage

* Profit shering

* Subsidised meals

* Subsidised travel

IBM 370/148

DOS/VS

IBM 370/138 POWER/VS

SENIOR OPERATOR

To £5000 + £620 e.a.

To £5000 + £620 e.a.

To £4600 + £620 s.s.

SENIOR DATA

CONTROLLER

OPERATOR

Three key positions ere being offered within this progressive operations team. If, es they do, you consider operations to be a cerear you'll be able to take adventage of good training schemes and subsequently improved job prospects. Call us if you are smbittious and cen offer:

Two years' relevant experience at the senior levels with IBM JCL knowledge in the case of the Data Controller, and 18 months at the more junior

CONTACT ROLAND JONES NOW ON

01-603 7335

MANAGEMENT & **EXECUTIVE SELECTION**

telephone 01-637 9611 9 a.m.-9 p.m. FRI. to WEDS. (June 8, 11, 12, 13)

JOIN A TOP TEAM AND SCORE IN CONSULTANCY TO £8K+

Head Office in Buckinghamshire and projects throughout London and Home Counties

All consultancy is done on site, but you will not need to work away from home or travel undue distances.

Travelling expenses are paid, salary is excellent and benefits generous.

OUR CLIENT OFFERS

★ Variety

★ Good Pay

★ Profit Sharing

CAN YOU OFFER

★ Commercial mainframe background?

★ Superior knowledge of COBOL, Assembler or PL1?

★ The ability to work on own initiative?

So, if you want a worthwhile career in a young, sociable company which will reward you for your hard work, then

PROGRAMMERS

ANALYST/PROGRAMMERS

c.£7K

ANALYSTS

c.£8K

Phone Derek Pearson 9 a.m. to 9 p.m.

MANAGEMENT& EXECUTIVE SELECTION &

Suite 201/6. Alpany House 324 Recent Sugery (1976) Vals 50/4 01/657 9611-

The following the second section of the second section of the second section of the second section of the second section secti

UMRCC

University of Manchester Regional Computer Centre

Director: Professor Gordon Black

Expansion creates further opportunities to join one of the foremost computer centres in Europe

UMRCC is a national centre providing a general service to over thirty universities in the United Kingdom. This is currently based on two Control Data 7600 computers each front-ended by an ICL 1900. A CDC CYBER 72 provides an interactive service to Manchester users, accessed by over a hundred terminels.

OPERATING SYSTEMS

Lend in teems responsible for the development and support of the GEORGE 3 operating system on she ICL 1996s and 1904s computers. For this serior appintment you should have in-depth snowledge of GEORGE 3 and preferably experience in leading a team of programment. If you have less experience you could be a member of the team. Current projects include the implementation of the North West Universities Mistroria System (GANNET), the investigation of felestors subsystems, and replacement processors. Rel. 124 799 CW. The salary will be on the scale 14,232-67, [45 p.s. or 05,856-68,482 p.s. depending an experience. The scales will increase to 14,233-17,521-ps. and 17,227-05,992 p.s. in October, 1879:

COMPILERS

Help to provide, maintain, and support a wide renge of compilers. You should have expenence of compilers and systems programming, together swith a knowledge of FORTRAN and one other high level language. A knowledge of CDC and /or ICt, 1999 systems would be an advantage. Ref., 125/79/DW. The selery will be on the scale 53,689-56,106 p.e. which will increase to £3,775-£6,355 p e. in October, 1979.

RESOURCE CONTROL SYSTEMS

Assist in the provision of resource control softween. The successful candidate will be working with a team responsible for the development end support of authorie to monitor and control computer resources allocated to usors. You should have experience of program development from design to implementation. Rol. 126/79/CW. The salary will be on the scale \$3,889-88,108 p.e. or \$4,237-\$7,145 p.e. depending to experience. These scales will increase to \$3,776-85,133 p.e. and \$1,333-\$7,521 p.e. in October, 1978.

COMMUNICATIONS SOFTWARE

Gevelop softwarn for packet switching to link the ICL 1900 computers to the Post Office PSS via n OE 4070 occessor. You should

INTERACTIVE SYSTEMS GROUP

INTERACTIVE SYSTEMS

John a new interactive systems group. Two programmers will be appointed to work with a team teaponsible for the development and support of the sorvice based on the CYSER 72 tunning under the NOS operating system. Current project areas include system parlatmence monitoring end energies. The state of the systems of the systems of the systems programming, preferably on Control Gaie computers Ref. 128/79/CW.

The salary for both posts will be on the scale £3,489-£4,108 p.a. of £4,232-£7,145 p.a. depending on experience. These scales will increase to £3,776-£6,350 p.a. and £4,333-£7,521 p.a. in the label, 1970.

USER SERVICES GROUP

APPLICATIONS SOFTWARE

Help to support and senintain in wide range of applications are twenty. The principal activities of the successful candidate will be concerned with software provided to users at Manchaster who have access to the local interactive service, currently bead on the CYSER 72. You should have a sound knowledge of FORTRAN, and experise with graphics, statistical or angineering packages would be an advantage, Ref. 128/79/CW

The salery will be on the scale £4.232-£7,145 p s. which will increase to £4.333-£7,521 p.s. in October, £679.

INFORMATION AND DOCUMENTATION

Work with a section which produces menuels describing the computer services allered to our 10,000 users Paricular amplicate will be placed an documenting lackilles evallable on the tucal GyBER 72 interactive computer. The appointes will also be unpocted to take part in the devicery service provided to these users from the University of Manchester Ref 130/79/CW. The salary will be on the scale E3,689-08,198 pra which will increase to E3,775-68,335 p.a. in October, 1979.

LIAISON AND TRAINING

The salary will be en the scale (3,680: £11,108 p.a. which with increase to (3,775 £6,355 p.a. in October, 1979.

OPERATIONS GROUP

COMPUTER MANAGER

TECHNICAL SERVICES MANAGER

The salary for both management posts will be so the sele 66,886 CB, 152 p.a. which will increase to \$2,227 \$1,992 ps. b tamber, 1970

Bondits include a good panelon scheme and generous holiday entitioment. If you would enjoy the challenge of working in a stimulating environment, with the prospect of a rewarding carear, sould for further information and an application form (returnable by 28 June, 1878) to the Registrar, University of Manchesler, Oeferd Rund, Missection of M13 9PL, quoting the

We're looking for . . .

FALMER

Falmer Jeans is one of this country's most successful manufacturers of laisure wear, and as part of our continued programme of expansion we have the following vecencies in our newly-established computer departmant based in Raylaigh, Essax.

2 PROGRAMMER ANALYSTS c £5,500 p.a. Minimum

A Burroughe B1B30 is currently being instelled to handle all epplications from Order Processing through Production Planning, Stock Control and Accounting. We now require two Programmers to dssign and implement next phesas of this development which will involve a considerable emount of liaison with usar departments.

All systems will use the latest developments in on-line date base tachniques using Cobol ea the application lenguage. Suitable expansince in ell these areas will naturelly be en adventage.

COMPUTER OPERATOR/ TRAINEE PROGRAMMER

c £3,500 p.a. (No Shifts)

For this position we require a young person with the experience and tachnical ability to exploit the potential of a sophisticated on-line computer system. It is plenned that full training on Burroughs hardware will be given, leading on to lurther courses covering Cobol programming and datebase techniques.

For further details contact: Adrian Cubitt Telephone No: RAYLEIGH (0268) 773633 Ext. 214

Falmer Jeans Limited, Brook Road Revielgh, Essex IBM BAL

£200 to £260 p.w.

01-262 2251

Changethe face of your future.

> Feel more satisfied with a career. that fits your falents. Dennis Clay, will show you how call him,

> > on 01-680 1955.

IBM OS ASSEMBLER

> £240 to £260 p.w.

Scicon

£5,500 to £11,250 **CONSULTANCY AT SCICON**

- * SIMULATION
- * DEFENCE SYSTEMS
- * STATISTICS
- * SYSTEMS DESIGN * MATHEMATICAL MODELLING * VEHICLE SCHEDULING * LINEAR PROGRAMMING/O.
 - * MANAGEMENT SCIENCES

Consultancy et Scicon covers a wide renge of Civil end Defend

The leeding Internetional Computer Systems and Consultancy Compeny ere offering e range of openings. Perticular req ments include Consultents and project Leaders/Managars Defence Systems and Civil Modelling elthough there and ettrective opportunities in both areas et all levels.

It is preferable that candidates have two or more year experience in some of the ebove mentioned fields and show have the ebility end potential to handle project management end leedership responsibilities.

A real cereer cen be offered, which spens a field from gramming to menegement consultancy, with the emphasis being pleced on the latter. Salary levels quoted are realistic for the consultance of the salary levels and the salary levels are realistic. negotieble on both past experience an future potential

Phone Jack Cowdy, Director, on 01-603 7885

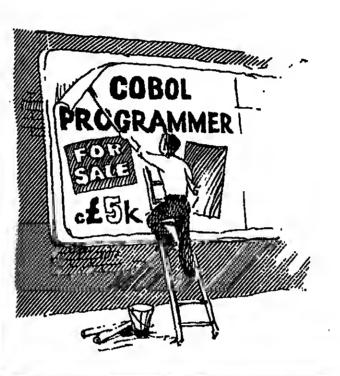


Information Processing origine Services & Recruitment Consultation

MANAGEMENT & **EXECUTIVE SELECTION**

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS. (June 8, 11, 12, 13)

Advertise yourself -A once-in-a-lifetime opportunity...



DORSET

CORAL?

and/or Assembler

REAL-TIME?

EXCELLENT

BENEFITS

PACKAGE

Mainly in the range

to join one of the largest and most innovative ADVERTISING groups in the country.

If you are a young COBOL PROGRAMMER preferably with IBM DOS experience and are looking to your future, join us and help create our new systems, in the exciting field of advertising.

We are based in CENTRAL LONDON and will pay

c. £5k+bonus+perks

to teach you about advertising and our proposed new mini.

Phone Terry Bate 9 a.m.-9 p.m.

PROGRAMMERS & SYSTEMS DESIGNERS

with relevant real-time experience in Coral and/or assembler are needed to work with our GA minis and PDP11s on

traffic + control systems

for major contracts in Home and Overseas markets, and for current and future projects in state-of-the-art technology.

PROJECTS include data communication. test and terminal equipment, telex switching, traffic control, road and rail control and communications, and identification systems.

BENEFITS include an excellent location close to sea and country, company pension fund, social facilities, subsidised lunches, 371/2-hour week, min. 20 days'. holiday, first-class siokness scheme and a generous relocation package.



Find out more by ringing Derek Pearson, 9 a.m.-9 p.m.





FINANCE CEPARTMENT SYSTEMS AND PROGRAMMING SECTION

SYSTEMS ANALYST

Salary grade: A.P. V £6556/£6066 (including sripplamen Due to internal promotion a vaconcy oxists for a systems enalyst to join one of our Project Teams.

cante should have at loset 2 years' programm parienca end systems design experianca. They should be able to damonetrate en ability to work in a leam environment. A professional qualification would be of advantage.

ANALYST/ **PROGRAMMERS**

Salary grads: A.P. £4629/£5403 (including supplements An opportunity presently exists for two Analyst/Programmors to join the Systems and Programming Project Teams
Applicants should have at less three years' experience of programming in COSOL and be able to demonstrate an ability to carry out systems enelysis in a seem convironment. A professional qualification would be all adventage.

COMPUTER PROGRAMMER

6sisry grada: Toch. D (presently under review) £4246/ £4773 (including supplement)

Due to an internal promotion a vacancy axists for a computar programmer to join one of our Project Teams. Applicants should have at least 2 years' expenence of programming in COBOL. A wide variety of local authority work is undortakonou bohall of the Regional and three District Councils Career prospects are oxcallent.

Placing according to expenses on salary gredes Carry directly or indirectly will disquality.

Application forms and Job Specifications for the above posts from Ragional Personnal Officor, File House, North Street, Glerrothea, File Tel, Glerrothes 754411 Ext 245/8, to whom comploted form should be returned not later than 15th June 1979, Please quota Reference RP/49/57/CW



PROGRAMMER

c. £5,500

A vacancy for a Programmer has arisan with E. Gomme Lid. who dasign and manufactura G-Plan furnitute.

The poeltion involves membership of a small learn-writing application programmes in PL/1 for both beich and T.P. (SHADOW II) systems. Program development is done on-line using SHADOW/QUOTA. The successful applicant will be encouraged to develop system.

The installation is A256K (BM 370/125 with 3330 disks, tape and VDUs, and further expension is planned. Applicants should preferably heve at least two years' experience in PL/1. RPGII, SHADOW II or System programming experience would be an advantage. The Company is a first-class employer and will, when appropriate, assist with removal expenses.

Company Parsonnal Managar E. GOMME LIMITED

An exciting future for ambitious Microprocessor Engineers.....

We are expanding our Microprocessor Application Section and have development plans that will project us well into the 1980's and further, it's going to be an exciting time with lots of opportunities.

If you are aged between 20 and 30, have a Degree in Electronics, Computer Science or Mathematics you could be one of the people we are looking for. You need not necessarily have direct experience in microprocessor technology but, it would be an

What are the jobs? Our Microprocessor Application Section is involved in applying microprocessors to products and industrial control, using board and chip level microcomputers. Our expansion plans incorporate the need for people in two interelated areas:

1. Software

You will be primarily involved in program development in assembler and high level language. You will be expected to work with minimum supervision to produce the complete software package – identifying requirements through to implementing systems. This will mean co-operating with hardware engineers and liaising with

2. Hardware

You will be primarily concerned with component and system specification, with direct involvement in circuit design and printed circuit layout and analogue and digital

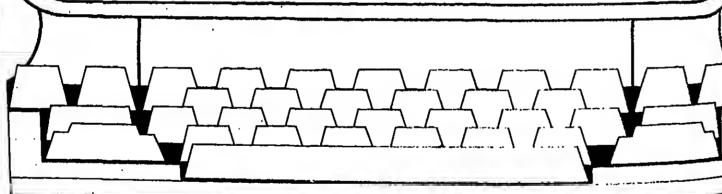
For the successful men and women there are attractive salaries plus all the additional benefits you would expect from working for Britain's largest international engineering

Write today, enclosing a full curriculum vitag, and see if GKN can add a little planned

Personnel Executive, GKN Group Technological Centre. Birmingham New Road, Lanesfield, Wolverhampton. WV4 6BW.



GKN-Britain's largest international



Real-Time Coverage Programmers

Further expansion of BABS already one of Europe's largest real-time computer systems offers an oppor-systems programming, or systems initialisation, and large real-time systems control, database management and operations. Salaries will reflect qualifications and experience and starting pay will be up to £5500, with excellent opportunities for progression to more senior positions with salaries of up to £8000 and beyond.

British Airways' real-time computer systems provides world-wide, round-the-clock Passenger Service System handling approximately 2 million enquiries a day from over 3000 on-line terminals. The system is currently based on Amdahl 470/V7 CPU's under the Alrline Control Program (ACP) operating system.

Coverage programmers work closely with all programming groups, operations and engineering staff to control the system involving performance monitoring, system, testing, establishment of cutover procedures, and producing utility programs which contribute to the

Candidates should ideally have a minimum of 2 years

British Airways welcomes applications from suitably

qualified Registered Disabled Persons:

As one of the world's leading international airlines, British Airways offers excellent conditions of employment which includes 8 holiday pay supplement, inflation-proof pension scheme, subsidised cafeteria, aports and social facilities and favourable holiday air

If you like the idea, and you'd like to find out mora, you can arrange an early interview by phoning BABS Systems Control on 01-759 5511 Ext. 5156/3232/3697 on Tuesday 19th or Wednesday 20th June between 6 pm and 8 pm or say day during normal office bours. Alternatively, write to:

Recruitment & Selection, British Airways, P.O. Box 10, Heathrow Airport-London, Hounslow, Middleser TWO HA.



Contract Spot

SYSTEMS ANALYSTS PREF. REAL-TIME EXP. ECIENTIFIC ANALYST/PROGS.

IBM 360/370 COBOL LONDON BETTER RATES PROMPT PAYMENT

one Paula on (1) -946 4424 Meicor Computer Consultants Ltd.



FREELANCE PROGRAMMERS

Spring Grove Services, a leading company in the garment rental business, requires Programmer in work on new developments in the company's open. Our provent system run under GEORGE 2 on an IRC 1903T, with a subsidiary company in Ho in IBM System 32. The market is changing repair. and our systems must change to remain competition.
To this and we are investigating the use of miles computers and micro-electronics and the jechniques.

PROGRAMMERS

Henley-on-Thamos

We need Programmers who can come up with gold ideas as well as good software. Two years COST experience is essential and a knowledge of 890 CL-1900 or IBM System 32 machines would be advantage. The successful applicants will join and highly skilled teams based in Henley. Then will opportunities to travel to our processing page. distributed processing. opportunities to travel to our processing throughout the U.K. There are attracted benefits including free insurance and contributory pension scheme.

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS. (June 8, 11, 12, 13)

Come and work with

in Central London

WEARE

a large Commercial Organisation

based in London

OUR SYSTEMS

ICL 1900s upgrading to 2903 and 2960 plus PDP 11

WE REQUIRE

Programmers

ICL 1900/2900

experience preferred

Junior Analysts ICL experience preferred

Teleprocessing experience would be helpful but we will provide training as necessary

WE OFFER

Excellent salaries

First-class training facilities Usual large company benefits

SALARY £5 1/2-7 1/2 K



In the first instance, contact Terry Bate, 9 a.m. 9 p.m.

Suite 201/6 - Albany House 324 Regent Street London WIR 5AA 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

MYRIADI

ICL OPERATIONS SUPPORT

S.W. LONDON

NO SHIFTS

£5000-£6500

A major international organisation with extensive interests throughout Europe and Africa and a turnover in excess of £120M, our client is a weil-established ICL user. A substantial upgrade has been undertaken recently and the present dual 3Mb 2960 configuration under VME/B with extensive T.P. is probably one of the most sophisticated in London.

The role of the operations support team is to write SCL then implement and support production systems and provide a comprehensive consultancy service to the operations and production control departments. The company is now extending this team and is able to offer a number of outstanding opportunities to ICL operations staff at two levels of experience.

* 1900 GEORGE 1i/ii + Operations Personnel -- If you can offer a soundbackground incorporating experience of JCL, utilities, program libruries and macro's then the company will provide extensive training in VME/B SCI. and all aspects of 2960.

* 2900 VME/B Support Personnel - if you have experience of operations support and writing SCL in a System B environment this is an ideal opportunity to develop and enhance your expertise as a senior member of an

The commencing salaries are in a runge according to experience and the positions offer a highly rewarding future with excellent opportunities for career progression within a sophisticated installation.

Ref. SW1/0706

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants Telephone or write to:-30 Fleet Street London EC4Y IAA 01-353 0981 (24 hrs)

VIDECOM

Assembler Programmers

VIdecom Ltd. are manufacturers of the world's first multi-host computer terminal facility with an Impressive installed base worldwide including numerous International airlines and major corporations utillsing its products in sophisticated communications networks. Due to continued rapid expansion Vldecom urgently require experienced Assembler Programmers. If you are self-motivated and have 1-4 years Assembler experience this is a superb opportunity to join an expanding organisation.

If the prospect of working with a small team on exciting stateof-the-art communications projects in the pleasant surroundings of Henley-on-Thames is appealing, then come and talk

Salary will be competitive and will appeal to those already earning in excess of £5,000 per annum.

Phone Logistix on 01-491 4636 who are retained as selection consultants or write direct to Mrs. M. Barker at Videcom Ltd.Newtown Estate, Reading Road, Henley-on-Thames, Oxon RG9 1HG,



360 Oxford Street, London, WIN9HA. Tel:01-491 4636

Holland

Enthueieetic Systems 34 Progremmere who would like to earn in excess of £11,000pa

Phone or write to Norma Baxlet at 01-953 4066 Advance- and be recognised

Employment Business Section: 9 Elstree Way, Burchantywood, Thorse 3131 Jac

OPPORTUNITY COMPUTER STATIONERY

REPRESENTATIVE with a landing Craydon like

You must have enthusiasm les computes and experience in self-ing to middle manegement. Your sree will be Nerleik, Sulfri Cambildge end Seifferd

In return you wilt receive a grood salary, commission and banages, a company car and four wooks' holiday. Ptus the banalite of a non-contributery pension scheme and two badroom company lint with service agreement with the company in the company i vith service egreement will

pply in withing to

Mr. M. J. Seper Managing Director SCS BUSINESS SYSTEMS LTD. SCS House, 77 Millen Reed Groydon, Burray

Are you as good with people as you are with computers?

Data training - in the past 5 years have become one of the largest and most successful computer training companies in the UK. The high dard of our courses has uttracted compenses in all apheres - corpormount departments, local and hordres and computer bureaux.

The number of students aftereding computer composis continually increasing, which is why we need the paramete to join on

hi indifficitio looking by experienced pre-juminors we also seek a programmer with specific ICL 2001 repenses who wants to use his skills to get involved in a injudity developing over of examplings

You should be manne with the ability to talk repeatile. meato your akilla and expanding a clearly and cases metly

Altor on initial training period your work will beight bolwoon dolivering courses, compliant reports, visiting students. installations and enuming the training courses are as developed. comprohensive and proched on possible

You'll only unless ellout salary between 15,500 is 18,000 with an animal bornes and monthly comme sporter est on prefits. Aboyout you will empy the challenge and roward with has part of an heurictars life. and the satisfaction which can be derived from a successful days of students.

If you think you are assport with people as you are with computent, we'd like tahen him yan

. Hong up to 200 p.m. team engresin interview, or first out note about our informal discussions which are hold on Salunday meature

MANCHESTER

Vie Dailton, Amelicke Centic. Chester Road, Stretland. Monchestor IGI AGA 7941. LONDON: GIII Stormant, Asserts Hanna. 17 Elverton Street, Landon S.W.L.

Senior **Computer Operator** Keaniii

Philips Research Laboratories require on experienced operator to join e small team in the Computer

The Department runs a computing service for scientists and engineers involved in many voried great of research. It is based on two ICL 1904S processore, using a special version of George 3 which ellows both to access the same file store. A Orgico 1603 front end connects 38 terminals in June en SEL 32 computer system will be instelled to

Laboratories

will elec be required to essist end deputies for the Chief Compute Operator in organisational and several yeers of 1900 and George 3 experience ere essential, together with a technical knowledge of communications equipment. The ebility and llexibility to learn about new eystems is elec needed. A five-dey week is worked, normali-8.30 a.m. to 4,30 p.m. with ehill houre (live times in Iwo weeke) from *2 p.m. to 10 p.m.

do CAD of integreted circuits.

The person chosen will be involved in all usuel espects of operating, and

PHILIPS

Guidance to YOUR FIRST **Freelance Contract** Vic Groves Knutsford (0565) 52577

Step by step

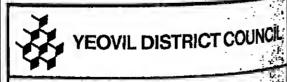
BURROUGHS L9000 OPERATOR

(office hours)

or (0565) 3122

Required for leading Wast London Auctioneera and Estate Agents based in W.12. Salary nagoti-

Please contact Willmotts 01-743 4444 Ref: TMHM for further details IN THE REPORT OF THE PROPERTY OF THE PARTY O



TREASURER'S DEPARTMENT.

COMPUTER PROGRAMMER Salary up to £4146 Inclusive (pay award to

1at July 1979)

The Council's computer is an ICL 2903, with Ebs' 603 the on-line enquiry facilities. The post offers a wide variety of the melnly in the cross of programming, operating system makes and setting to underest

Programming lunguages are RPG II and FIND 2 and present and selection of the second selection of the selection of the second s The aree is no ottractive mixture of rural and upon the ments. The district is pleasantly situated and its southly extend to the loot of the Poldon Hills in the southly boundaries of Doven and Dorset in the southly and Blackform Hills in the southly and the southly and

Bleckdown Hills in the weel . Financial essisionce lowards relocation expenses of and housing eccommodation will be available to

Application form and job description available fit Application form and job description available set Seasonnel Officer, 91 Preston Road, vacalities BA20 EDF or relephone Yaovii 5272 extension Closing Bett 20th June 1979 Cipeing Bets, 20in June 1979

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI-.WEDS.

(June 8, 11, 12, 13)

COMPUTER ENGINEERS

Join the largest independent computer maintenance organisation in Britain and improve both your prospects and your technical environment

This well-established company is still growing and can offer EXPERIENCED AND TRAINEE COMPUTER ENGINEERS a good variety of systems to work with - IBM/DEC/DG/CA etc.

Right now they need good people in all of the following areas:

BIRMINGHAM BRIS COL

CAMBRIDGE

STOKE-ON-TRENT

TEDDINGTON

(Middx)

EUROPEAN MEDICAL SUBSIDIARY

HITCHIN

LONDON

Field Engineer (ideally PDP 11 trained) Senior Specialist (IBM 370)

Site Engineers (ideally PDP 11 trained)

Trainee Engineers (ONC/Electronics exp.) Field Engineer (mini computer experience)

Technical Specialist (Support and

manufacturing liaison experience) Field Engineers (PDP 11 or other mini

computer experience)

Trainee Engineers (ONC/Electronics

experience)

Workshop Engineers (component level

repair experience)

Electronic Engineer (to work on Data Comms Network)

★ Profit related bonus * Company car or generous car

Competitive Remuneration Package

allowance

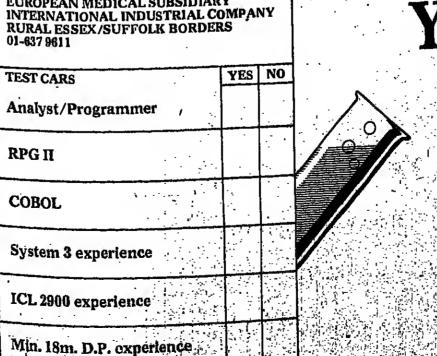
★ Attractive basic salary

★ Non-contributory pension scheme

★ Air travel/holiday concessions

This is your chance to broaden your experience and develop your career with a company specialising in service to the computer industry, so don't miss it - contact Peter Gorton or Aian Slater, now!

Change your tube



You passed the test? Good!

> Join our small development teams using a Systems 3/15D both stand-alone, and on-line to a 370/158 at our U.K. Data Centre.

BENEFITS? GOOD NEGOTIABLE SALARY, excellent perky, and RELOCATION help where necessary.

So for your move to the country contact Val Bowen 9 a.m. 9 p.m.

MANAGEMENT&

Sulte 201/6 Albany House \$24 Regent Street London WIR 5AA 01/637/9611 EXECUTIVE SELECTION

Is this the high point in your programming day?



Whathave you so got Joulouse..?

One of the most advanced

computer units in the world.

Ever get the teeting you're using your 10MB brain to braidle a progremming job that only needs a lew kB of intelligences

Plenty of good programmers are in jobs that have about as much real challenge and interest as a junior crossword puzzle.

If you're anything more than just another commercial programmer, and particularly if you're interested in things mechanical, we could take you out of the hundrum world of programming, and start you in a career in softwire

You'd develop real-time software that forms the beart of some of the world's most edvanced electronic systems, like airborne radar, surveillance networks and sonar. You wouldn't just work closely with systems users, you'd be part of the fearn developing a whole systam from scratch. You'd work in CORAL (don't worry it it's a foreign language to you at the moment) and you'd work to the highest levels of integrity.

Frenkly, it you don't find our kind of work exciting and

rewarding, there's very little we can suggest.

Except perhaps heng gliding bilindfold over a swamp luti

To lind out more about the excitement of software engineering with Merconi Avionics at Borehamwood, telephone or write: to Chris Hill, Marconl Avionics Limited, FREEPOST, Elstree Way, Borehamwood, Herts WD6 1BR. Telephone 01-953 2030

Please quote reterence MA 79080.



CIRCA £230 p.w 01-262 2251

LOUGHBORONA UNIVERSITY

PROGRAMMER! ANALYST

Previous AMMERICANALYSI To Leaf a Pre-resung Unit of the Review Administration, based on stand 19045 and Prima 24 400 mechanis spelies almost mainly in finite in 1818 and 1818 to preferred and a term of records Adogrees was a would be preferred and seas to being of inancist computing COLI a quirod and FILEIAR words to polymore.

2903 Exec 1 COBO £225 p.w 01-262 2251

An exceptional opportunity in computer systems training

Not surprising rasily, considering it belongs to one of the world's leading semiconductor menutacturers. Motorole. To one or that this tast-devotoping and broad-based organisation continues to operate with maximum etiliciancy it's essential that intornation is centralized and deatt with in the most offective way. That's why our Computer people era so important Expansion has now created great opportunities at our French centre for the following people: Data Logic's Terminal Systems Division is one of Europe's leading suppliers of intelligent terminals and distributed processing systems. Our users come from government, industry and commerce. We are engaged in an ambittous expansion Analyst/Programmers programme aimed at more than doubling urnover in the next five years. This will create extremely attractive prospects for career

ideally you should have 2-5 years' relevant experience, particularly of COSOL, MARK IV, and IMS. Those with previous supervisory experience or with provon ability in Profeol Management will tind this a definite adventage. A knowledge of French is obviously an asset. We require a Training Officer to take responsibility for both customer and internal staff training. He or she will plan and prepare courses on the Division's hardware and software products. The courses will be given **East Kilbride** in-house and at customer sites throughout the country. The Training Officer will also And for those who would rather work closer to home there are vacancies control demonstration areas and systems at

Candidates should have an aptitude for computing as well as a recognised teaching qualification or relevant training experience. They are likely to be engaged currently to a teaching position in higher education or in a training role with a mainframe or



Write or call quoting reference TS/04: Kathy Martin. Data Logic Limited 29 Marylebone Rosa London NW1 01-486 7288

HAZELTINE LTD. PERIPHERAL SERVICE ENGINEERS

our new headquarters in Central London, now being equipped to the very highest

We are currently seeking engineers of all levels of experience, traines to senior, to service our customer bese both in the itself and at central office.

Salary will be commensurate with experience and some

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS. (June 8, 11, 12, 13)

What's in

DPM? Consultant? Project leader? Titles don't make the man in this industry — it's you that really counts - especially if you work for this small dynamic systems group specialising in on-line real time systems for the Travel Industry.

What we require are two CONSULTANTS to effectively act as DPM to several consulting clients - not only recognising their problems, but knowing the solution or designing it from

scratch, and then controlling it through to implementation and operation.

YOU will be based in WEST LONDON and can expect an attractive and flexible salary package of circa £9K.

We are also keen to recruit a SYSTEMS ANALYST with the potential to become a Consultant; to help with our expanding workload. For this position, we are offering c. £7K.

Contact Terry Bate between 9 a.m.-9 p.m.

LARGE SYSTEMS





COMPUTER SERVICE ENGINEERS

The UK division of a major multi-national computer manufacturar is seaking experienced engineers to expend its existing team of herdware professionals.

Large Computer Systems earnings to £8K

Computer service personnal are required for the site maintenance of installations in MANCHESTER, LEICESTER and CENTRAL LONDON:

Plug Compatible Peripheral Sub Systems earnings to £10K + car

Field service personnal are required for maintenance of distributed installations in the CENTRAL LONDON and GREATER LONDON.

with this organisation career prograssion, training and income are regularly reviewed; ensuring that effort and talents are realistically rawarded.

Bon timiss this chance to join this successful and prograssive team = contact Pater Sorton new!

Suite 201/6 Appany House 324 Regent Street London Wik 5AA 01,637 9611

MANAGEMENT & EXECUTIVE SELECTION

involves a new IBM/MS package and you'll be playing a key role introducing complicated time shaling programmee. You'll also be required to travel to various Motorole centres on the Continent.

The experience requirements are the same as above but consideration will also be given to candidates who possess a minimum of 3 years' experience in programming and systems analysis and who have a good knowledge of

in the highly solvenced EDP unit at our East Kilbride plant lor

Here we're about to install an IBM 8100 decentralised computer. This

Since you have nothing to lose—and a bright new tuture to geth—contact Alan Smith, Personnel Ottics; now at Motorole Limited, Colvilles Road, East Kilbride 38101.



miniconquiter manufacture,

This is a new position and the opportunities will be considerable for an imaginative candidate to influence the Division's tuture . . and hence his or her

DATA PROCESSING MANAGER

to be responsible direct to Managing Direction growing ongingering company. Cobol experience interactive operation regulard. Semi-pronecessary. Machine configuration NCR (2004) knowlette inventory and production could supervising staff of 3,

Apply: Managing Director ENGINEERING DEVELOPMENTS: (FARNEDROUGHT: M. 180 Enimour Road, Fambonsough, 1879)

£5000-£6000 + Shift Allowance

Due to a recent promotion, we have an opening for an Operations professional to join the Bureau which is at an early and interesting stage of development. The person appointed will enjoy wide responsibilities and also have excellent visibility within the Group for future career edvencement.

Our main requirements are:-

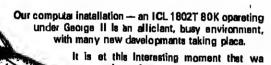
- **★ 2900 practical experience using VME/B.**
- * Operations staff supervisory experience.
- * A mature, responsible outlook with a strong desire to meet targets.

In addition to a salery within the ebove renge the usual terms and benefits of a lerge Company will apply. Please write in the first inetence giving details of ege, quelifications, end experience to:



J. A. Thomes, Computer Operations Manager Safe Computing Limited, Intersection House 110-112 Birminghem Road, West Bromwich, West Midlends B70 6RX





naad a sanior oparator to IIII a vacency resulting from internal promotions.

lously committed to the computing rld, who sims to go lurthar, and last, nant to the successful applicant in cluding prolassionsi training by courses and on-the-lob fultion. Theis may also Senior Computer ba opportunitias for promotion althar within the operations and programming eactions and on to systems enalyst if

Starting salary up to £5,000 for an axparienced computer operator, in-cluding sllowences for the 2 shift structure. Sansilts include cer purchsae schama, 4 weeks holiday end company

Who wants to get on-Maurean Cross, Toyote (GS) Limited, 320 Purisy Wsy, Croydon, Surray CR9 4HS Talaphona: 01-881 1821 offica.

SOUTHERN CLIMBS!

Up to £5,000

(Crawley, Sussex)

quickly

Operator

Systems Designer (Micro/Mini) Senior Programmer (Berser) Systems Programmer (Besis) Besier Operator (IBM) Consultant (Systems Heuse) 8 £7,500 £7,000+ £5,000 8 £9,000 Trainee Programmer (ICt New Range) Project Leader (Bernen)

BOS WILLIAMS KNOWS THE SOUTHERN MARKET and can b relied upon to arrange interesting and relevant interviews Telephona Todayi tor an early interview.

Management Busquad 2 Tunspale Geldford Surrey GUILOFORD 104831 68566

FORTRAN 63,500-19,000 ALL AREAS Phone for Ipes list of 637 5551 day, 636 9659 ev

CAPITAL APPTS. GRADUATES BALARIES c. C3,000



Everything keeps going right

solivere on to the Dutch marker. To support the salery you will needed act for business and personal enticipoted sales growth our Client is seeking a Programmer aged mid-20's with several yeers COBOL (preferably mini or micro based) programming experience. Initially the successful cendidatewill be sent on an intensive ell expenses peid salery you will need to this mess and personal use and assistance with initial accommodation expenses. Interested candidates should respond immediately as interviews will take place by the end of this month. Rel: L71/05/B MIS Manager Thames Valley Salarv: c£10K

Fortran Programmers

West Germany

Mini Cobol Programmers

Netherlands

Salary: £12K + Car

Asmell but expanding Systems House Supplier basing lisproduct line on both Zilog Z80 and intel 8085 microsupport the Company's range of products from its West Itsproduct lineon both Zilog Z80 and intel 8085 micro-processors is shortly to release new herdware and Helherlands base. Supplemental to an above average softwere on to the Dutch markel. To support the salery you will neceive a car for business and personal

Applicationsere invited from candidates aged 28—35 yesses who ere currently working with mini-computers either in the role of Project Meneger or Systems or valley, will be required to travel extensively within Consultant. Our client does not ettach any particular significance to specialised hardware or software involvement but it is en absolute regular to have

The leading Scendinevian Systems and Tunikey Supplier with offices in Scandinevia, Netherlands and

U.S. requires Fortran Programmers for its expanding West German operations. There is a distinct possibility

that the successful candidates will beable to relocate to the Company's Head office. Whilst the applications

under development ere sophisticeted Real-Time

Projects previous experience of Real-Time is not Meneger from our clic ebsolutely essential but in-depth Fortran and interviews in late June.

involvement but it is en absolute requirement to have advantage but not resential. We will be drawing up 6 very recent or current application experience in the short-list for interview by the enclost his months are

in Informatics

Preference will be given to those candidates who have

very recent or current experience on UNIVAC 490/4 or UNIVAC 1 too series. Of course, willingness to relocate

to a most attractive part of Rhineland, Germany Is absolutely essential. To assist in your removal our

client will meet all relocation expenses in addition to

providing initial paid accommodation. A Senior

Meneger from our client's Head Office will conduct

U.S. Insurance Group City of London

Salarles £6.3K — £8K

A major American owned insurance Group with total saintles working in the Life Assirance Motor worldwide essets of \$750 million will pay above insurance and Re-insurance. Teams excessful average salaries for topic library and application of the control of the contro average saisries for top-cellbre personnel to work candidates will therefore be working on projects in the will the event does not be averaged as the control of the contro within its expanding Management Services (Inii. The U.K. head office has recently ordered an IBM 3031 to supplant an existing 370/148 operating under DOS/CICS/VS. Systems Analysts, Applications and Systems Programmers with DOS/VS Assembler or COBOL and possibly some T.P. experience will be offered an excellent working environment at top throughout June.

candidates will therefore be working on projects in the early stages of development so you are sure to expand your threshold of knowledge. In addition, our client offers free Life Assurance, insurance Discounts, low rate Contributory Pension Scheme, free B.U.P.A., subsidised restauront and flexible working hours. Interviews will be held on the company's premises throughout June.

Database Specialists London and E.E.C.

U.K.£7 — 9K, E.E.C.£12 — 15K

Our internetional client has openings in London and the E.E.C. for Senior Detabase Administrators; Designers and Applications personnel with extensive Database experience on major melinframe and mint systems. Of particular interest are persons with expertise in IMS, Total, Adebas, DBMS, IDMS etc. More important then the ectuel hardware experience is an in depth knowledge of your relevant area of Database expertise. Our client is enxious to maintain its particular ability. Interviews will be held in London throughout June.

Its prestigious standing worldwide byettracting proven its presting worldwide byettracting proven the proving the proving the proving the major proving the provi

Logistix, Freepost 32, London WIE 3YZ

London WIN 9HA

Licenced by D.O.E. Licence No. SE (A)2887

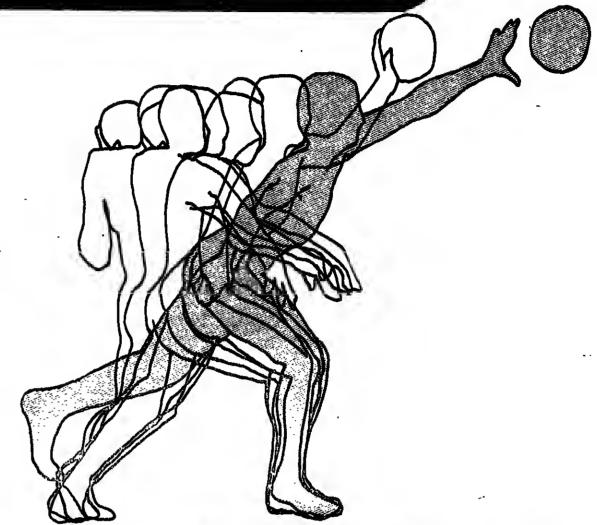
01-491 4636



Telex: 28800

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)



Let yourself be drawn into the world of interactive graphic systems

An exciting opportunity has arisen for computer service engineers in

LONDON

S. YORKS.

SCOTLAND

Our client is elreedy e leeding name in the computer industry and is now looking for experienced engineers to speerheed the rise in their repidly expanding interactive computer graphics division. This rere opportunity to join a new division in the early stages of its growth affords excellent and exciting prospects for future advancement.

Working from home initially you will be pert of e small teem meintaining interactive graphic systems comprising a minicomputer with the usual computer peripheral and graphic terminals. A good besic training in electronic engineering is essential and previous experience of graphic systems and V77 hardware and softwere is desirable. However, in depth training will be given.

Salary scele of £6K to £8K p.a., depending on location and ability, + company car will be provided, in addition, there ere big company benefits and rapid carear progression within e dynamic anvironment.

So don't delay, ring Alan Slater or Peter Gorton, 9 a.m. 9 p.m.

MANAGEMENT& EXECUTIVE SELECTION

Suite 201/6 Albany House 324 Regent Street London WIR 5AA : 01-637 5611





KNIGHT PROGRAMMING SUPPORT LIMITED

CURRENT CONTRACTS

GEC 4080 PROGRAMMERS 1900 PROGRAMMERS FTL6 FILETAB PLAN COBOL . . c£220 MIDLANDS AND NORTH-WEST LARGE 2900S VMEB SYSTEMS DESIGNERc£NEG

PDP11 RSTS DIBOL PROGRAM-

PDP11 RSX11M CORAL 66 PROGRAMMER/DESIGNERS

SINGER SYSTEM 10 ASSEMBLER PROGRAMMERS c£NEG NORTH AND SCOTLAND 370 PL/1 CICS PROGRAMMERS c£230

MIDLANDS' GMC REALITY PROGRAMMERS PDP11 RSX RTL2 MACRO BASIC+2 PROGRAMMERS ...

2903 BUSINESS ANALYST

370 OS/VS1 COBOL PROGRAM-MERS £NEG **MIDLANDS** IMS COBOL PROGRAMMERS

FOR DETAILS OF THESE

AND OTHER ETC.

MIDLANDS

RING **PERRY BUTLER** or JUDY LEES ON 061-833 9341/5

143/144 ROYAL EXCHANGE MANCHESTER TELEPHONE NO. 061-833 9341/5

Computing Services Association

Programmers and Analysts

Working in Amsterdam has all the benefits of working abroad and none of the disadvantages

The advantages and disadvantages of working alread are well known. In layour you have high-salaries, good career prospects and no liability to UK tax.

Against you have the language problem, housing and schooling for the family and the time and cost of travelling

But our clients offer you a parkage that provides the best of

They offer Systems Analysis and Programmers with a minimum of two years experience, free acrommodation and travelling, generous assistance with schooling (there is a British Primary School in Amsterdam, and, as they are based in Amsterdam where English is widely spoken, there is no language barrier and you are only an hour's Hight away from Salaries will be

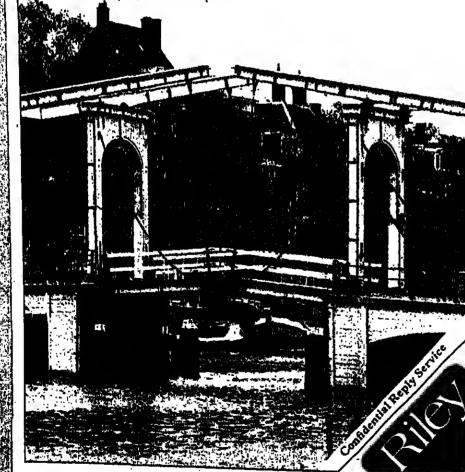
Programmers £7,000-£10,000 pa

Systems Analysts

£10,000-£13,000 pa

and as a highly successful multi-national crampany they roller involvement of an exciting range of development projects utilising IBA1 equipment.

The appointments will be on a two year renewable contract asiysa why not make Amsterdam your home from beauc. In the first instance, please write quoting ref; /231, with full career details, and listing any companies to whom you do not wish your application flowarded, to: Peter Phillips, Riley Advertising Limited, Old Court House, Old Court Place, Kensington, Landon WilaPD.



1900 COBOL **CIRCA** £230 p.w. 01-262 2251

COBAL **PROGRAMMER**

Any Machine £6.5K + car allowance (perm).

£200 por wk. (min. 1 yrs' contract) Call Ian Cox on 01-278 6426 (day) or 01-272 2794 (eves and w'n) ACS LTD., 37/39 Bowling Green Lane London EC18 0BU Setsry will be dependent on age qualifications a perionce, probably in the range £4000 £5500 p.s. Or B. Edmonds
The Institution of Chemical Engineer
185-171 Reliway Terrace
Rughy CV21-3HQ
Tol: (Gystal 2854.8)

(i) Contracts Personnel

Contract periods from 6 milhs, to 3 yis.

PDP 11 RSX 11

PDP 11 RSX 11

RPG 11 Compiler

BM Internale

Intel 8085/86

PDP11 RSX 11

TC 800

U118 Exc.

from £220

OS COBOL-MVS/TSO

Systoms Programmers

Systems & Programming

Scicoblin, Technical, Soliware

Analyst Programmers -- Technical

Design, Modification, Programming

Sollware Design & Programming

Analysi Programmers—Commercial

Analyst Programmers -- Commercial

Software develop and programming

Analyst and Programmers are also required for various commercial

For further details, please contact

FL2/CW. If more convenient pleasa call Barkhamsted (04427) 2299

__01-242 9356__

PROGRAMMERS

CHIEF PROGRAMMER

Smithble for a Somer Programming with live years as partitions of COHOL and PLAN. It is enviseged that

mitable candulates will carronly red be coming less

ANALYST/PROGRAMMER

Mithin can 2 years' experences of COBOL plus the shifty to work on their own mitinteen are the regulates for the

Thu contact cardigulation is a 48K 1901T with tapes

Northmopton and the secrounding environment is

pinosaul eren in which to ruside. Housing is ressorab

priced and homeint assistance will be given wit

Selarins for both posquars are negotiable, will be been

To find out more, cell us on Northompton (0604) 715500, or write to:

BARRATT DIVISION FOOTSHAPE WORKS, NORTHAMPTON

NN2 SEL

ANALYST/PROGRAMMER

The Institution of Chomical Engineers requires at any programmer for its Physical Property Date Service computerised dote base for chemical engineering described to the computerior of the computerior of

The person appointed would be required to de implement uper-oriented pockages and interest vanety of different mainframes.

Candidates should be sell-motivating and have a line knowledge of FORTRAN, be lamiliar with different operating systems and possibly have a selecting ground.

(SCIENTITIC)

Mr DAVIES ARRATT SHOES LIMITED

on experience and containly above overage."

Barriett Shoes of Northiompton linen the follow

Roger Allington, quoting ref.

ssignments in the U.K.

evenings / weekends

PL1 - 6 mths. + Experience £250+

1440

1.15

£420

c£350

o£370

£Neg

c£400 ₺

c£350 }

c£350

c£375

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS. (June B, 11, 12, 13)

We didn't get where we are today by being one step behind everyone else

-our products and people prove it

AES/Wordplex is a market leader in advanced computer based wordprocessing systems. They have achieved this position by not only having an excellent product range, but by also utilising "up-to-the-minute" promotional techniques including television advertising, combined with an aggressive marketing policy.

The present AES/Wordplex team, now well over 200 strong, is made up of young professionals selected from all over the computer industry.

They have one thing in common — they are all

If you feel that you would fit into one of the following three areas and can cope with rapid career development in one of Britain's fastest emerging companies, we want to hear from you.

SALES PEOPLE London, **Home Counties.** Birmingham, Leeds

So you're a success, but is your compeny?

Do they offer you the No. 1 product in its

Do they understand the necessity of

Do they provide the innovativa merketing support to professionally promote the product and the company?

Do they pey you what you're worth?

AES/Wordplex doas all this, and more.

Remambar, succass breads success.

Contact Fave Ogilvie 9.30 a.m.-9 p.m.

FIELD SERVICE **ENGINEERS**

London, **Home Counties** and the Midlands

Mini computer or kay to disc engineers ideally with experience of floppy disc systems motorola 6B00 / Intel 8080 micro

Contact Peter Gorton 9 a.m.-9 p.m.

AES Wordplex offers all its employees: * 4 weeks' holiday

* Free BUPA

Suite 201/6 Albany House 324 Regent Street, London Wir SAA 01-637 9611

* Free Life Assurance and for the above positions,

company cars

SUPPORT ANALYSTS

London. **Home Counties**, Manchester, Scotland

Systems Analysts ere required to support and assist the sales force, by the design end presentation of technical proposals to individuel cliants

You will preferably have experience in mini computers and a knowledge of 0&M techniques or communications, and the ability to work in e pre- and post-seles environment.

Contact Tony McGrath 9 a.m.-9 p.m.

> **MANACEMENT &** EXECUTIVE SELECTION



COMPLETED WEEKLY Trins



AUSTRALIAN COMPUTER OPPORTUNITIES

THE MYER EMPORIUM LTD. Australia's largest Department Store Oroup and one of the World's largest retailing organisations have commanced what is the most saciling and commanced whet is the most satisfing an significant Data Proceeding project in Australia todsy. It is envisaged that a new NATIONAL COMMUNICATIONS NETWORK, incorporating the Point of Sale, with be developed nasding this letter "State of the Art" technology. A study has been initiated to astablish the requirements of this naw Bystem, the STRATEGIC DESIGN and the STRATEGIC PLAN.

Several key people ero needed NOW to participale in the study end then take part in the design. development and implementation. Location will be at the Corporate Read Office of Myer in Malbourns. Currently Myer operate a mix of IGM meintrame and NCR/POS terminals acques Australia.

COMPANY INFORMATION: The Myer Emporium was aele bished in 1905 and currently employs 29,000 people in 122 stores and local nons. The company accomprised of four

Myer Department Stores

Their revenue for 1978 was \$US1 31 billion with plannad annual revenue increases hance the need to greatly increase their information Pro-

ABOUT MELBOURNE, AUSTRALIA: Melbourno is the second largest capital city in Australia renowned for its applisheation, corpor-ati hoadquarters, superb restaurants, cultural centre and also being the capital of Australian lookalt. It is built on a beautiful bey offering

SYSTEMS DEVELOPMENT MANAGER Reporting directly to the Manager of Corporate Information Services. The successful person will plan, lead and control a large leam (around 80) O.P. professionals. It is expected the person will have a minimum of 12 yeers O.P. experience and

Because of the scope of the project a complete understanding of Systems Development Methology will be needed together with current knowledge of Deta Communications and Date Base dosign. A successful Management record is a pre-redusate, considering the importance of the Development to the MYER Group of companies. Retail and translocation experience would make the person ideal.

Remuneration will be by way of a package com-prising a salary, company cer, executive benefits and it is thought that SUSSO,000 should be taken as a guide. All relocation coats will be paid to Melbourna

An exciting function of this position will be the Research and Development of new Hardware and Software announcements in order to appreciate the impact of the Strategic Design. Apart from a high technical capability a strong management trackrecord is essential. Knowladge of MVS

la munaration will be by way of a generous plus a compeny car and executive benefits, but \$US45,000 should be taken as e guide Relocation costs will be pend to Melbourne

DATA BASE SPECIALIST The Myer information Services Group also need people who have designed, developed and implemented aubstantial IMS Data Bases. These people will take primary roles in Designing, Developing and implementing the Myer Date-Base. The opportunity offered here to unparallated in Australia.

Remuneration will be by way of a gamerous aslary plus executive penefits, however \$US33,000 should be laken as a guide.

PROJECT TEAMS PROJECT I EAMS
As he strategic plan is developed a large number of D.P. professionals will be offered, lechnically and insercially rewarding career positions as Analysis. Programmers, Network Engineers, On-Line Specialists etc. Il you have in excess of five years recent practical experience with Retail and Commercial applications, On-line/D.B. commercial applications, IMS-MVS-OS/VS II Systems Software than you ahould apply now.

Battles and Associated of Sydney, Recruitment Consultanta aince 1971, have been appointed International Search Consultanta for the Myer Empollum.

The Joini Managing Director of Battles and Associates, Kevin D. Howard, will be in London from the 24th to 28th June, He will be staying at the Chrichill Holel (telephone (01) 488 5800), and walcomes calls from those people who are genuinely inter-

Keyln D. Howar

BATTLES AND ASSOCIATES c/ Institute of Ofrectors

ADDS (UK) LTD A subsidiary of Applied Digital Dath Systems Inc.

Software Support Managers **UK or Europe** Software Analyst

A 'Ground Floor' opportunity in Micro-Based Systems

Applied Digital Deta Systems (ADDS) is one of the world's leading suppliars of micro-processor based, small business systems and the largest independent menufecturer of displey terminals. A Europeen operation is already well established end the company is now involved in a campaign of considerable expansion via a network of OEM dietributors and large-scale end users.

A key element of this plenned growth is the appointment of two software specialists operating in the UK based on

London & Manchester

end the appointment of e further specialist also based on London operating throughout

Europe

Each software specialist will be responsible for providing systems and applications software support for the Regent 300 and ADDS Systom 75 in the context of both end user end seles support.

It is anticipated that the successful candidates will have good experience of applications software related to small business systems end preferably have relevant experience of floppy and/or fixed disk systems, Basic, Assembler and operating software. Knowledge of data communications would be desirable.

Saleries for these positions will range from

£5,500-£8,500 + Car/Car Allowance

plus business expenses where relevant.

Leicestershire

ANALYST/

PROGRAMMER

Salary £4773-£5568 p.a.

Can you apply yourself to:

(inclusive of pay supplement)

Low-level language programming
 Front line maintanence

Hardware/soliwara interfecing

Lialson with Engineering steff

Work in a smoll busy leem

Raal Time System —

* Understanding our real-time Traffic Control System

Pleese contect Bernerd Conn or Caroline Connebeor quoting reference number ADD061



OOO SMR Seles & Marketing Recruiters Ltd., Victory House, 99 Rogent Stroot, London W1R 7HB. Telephone: 01-734 9776.

Systems Programmers — all levels

In order to davalopour naxt ganeration of micro-computer based terminals we need innovotive Programmers who ere looking for an opportunity of applying their abilities to the design and devolopment of

Those ebilities should include the capability of taking a product from in itial concept through design and devalopment into production. Spacifically, you will be involved on all of the following:

- * Interpreters
- * User Interfaces
- Meintenence and Diegnostic Routines

Pravious experience in ony of the above would be useful but not assential. enthusiasm, being the most important factor

We are looking for Systems Programmers et all levels, from recent greduates to those with many years of experience who are looking for a

Initially you wiff be based at Croydon although some travel will be no cassary in order to fullill your job rasponsibilities. Long term ceraer opportunities exist both in the UK and oversees.

The companiestion package will reflect the importance placed on these positions. Salary, in particular, will not inhibit selection of right persons

Please write or call, Cliff Marks Personnel Mensoo 6urroughs Mechines Ltd. 512 Purley Wey Croydon, Surrey CRO 4NZ Telephone 01-686 0355



Application forms and further details from the County Engineer and Surveyor, County Holl, Glenfield, Leleaster LES SRJ. Talephone Leidester (0533) 871313, Ext. 7422. Closing date: Friday, June 22, 1979, and interviews will be held on Wednesday, July 4, 1979.

r Interesting development projects r Attrective home prices in placeant countrysids

inencial essistencs with relocation

Computer Operator/ Programmer NATIONAL DOCK LABOUR BOARD

The business of a busy Penson Office dealing with members and presents throughout the County is expanding and being transferred from its present eccommodation in London to NEW OFFICES AT. KINGSTON-UPON-THAMES, Arieing from the mays we are looking for a system to COMPUTER OPERATOR / PROGRAMMER for the writing of new programmes and the modification. writing of naw programmes and the modification, mointanance and rie-bugging of oxisting software.

covering a wide rnnge ul programa. The successful applicant with also be required to undertaka the aupervision of operating the system. Salery range £8,578-£7,009 p.a. including

Conditions of employment era good and include— Contributory Pansion Scheme. 23 deys annual holiday (pro-relator 1978). 6 additional days loave releted to the 8 days public

40p Luncheon Vouchers. Office hours 9 π.m. 5 p.m. Monday to Friday.

Occupation of the new premises is not expected to place until July and in the interim period, the heron eppointed will he required to travel to the existing office et Albert Embenkment which is short welk from Vaukhal Stetione. Travelling expenses will be paid the successful applicant if he / she is resident in the Kingston Hill ares. Kingston Hill eres

For an application form please write to MRS. M. I DIBBEN, Staff Officer, ATTOMAL DOCK LABOUR BOARD.

JATIONAL DOCK LABOUR BOARD.

JATOMAL DOCK LABOUR BOARD.

JATOMAL DOCK LABOUR BOARD.

JATOMAL DOCK LABOUR BOARD.

JATOM

MANAGEMENT& EXECUTIVE SELECTION

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

The Company

A consultancy whose totally professional approach has earned them one of the highest reputations in the computer services industry.

Base salary £61/2k Earnings £15k

Commission paid monthly Guarantee period No upper earnings limit Company car scheme

ATTENTION SALES AND SALES SUPPORT **PROFESSIONALS**

Person

A gregarious personality with a good current knowledge of the computer industry organisation, structures and applications plus a background in systems, programming, consultancy or management.

Position

Reporting to the Marketing Manager, you will be responsible for account sales, developing existing clients and further expanding the already broad base of business. This involves travel to client sites so mobility is essential.

Contact Faye Ogilvie or Tony McGrath between 9 a.m. and 9 p.m.

SALES MANAGER **Position**

Company

An Internationally renowned manufacturer and supplier of sophisticeted visual display terminels whose success is based on over half a century's expertise and experience in the electronics field and whose product is regerded es the industry standard.

Candidate profile

You will be: An existing sales menager, or salesperson whose next step is menagement, with experience of the OEM Terminal / Peripheral merket. As further expansion into Europe is planned, European marketing knowledge would be en adventage.

The position is besed in the South East and commends a basic salary up to £10K plus incentive package and quality car.

AS UK Sales Manager your. responsibilities will include sales strategy/forecesting, the identification of market segments, resources for product promotion as well as the manegement end development of existing regional distributors both directly and through a small, professional, high performance seles team.

Contact Faye Oglivie of Tony McGrath between 9 a.m. 9 p.m.

Suite 201/6 Albany House - 32/L Repent Street - Longon W18 5/1/A 01:637 961

MANAGEMENT 8 EXECUTIVE SELECTION

CONTRACTOR OF THE SAME OF THE



NEW FINANCIAL DATABASE

CITY

Up to £8000

Would you like to help create a new top-level management system for the control of a famous multinational company's finances?

Our cilents are to use the latest minicomputer and database techniques. Employment conditions are above average and career prospecta are good.

If you have a creative ettitude to the use of computer in finance and

- enjoy communicating with senior management.
- heve upwerds of three years' analysis experience. Including financial systems
- have some database knowledge

then this could be the career opening you seek.

Ring us in confidence for en exploratory discussion, quoting ref. 152, or feeve e messege on our enswering mechine and we'll contact you.



Telephone 01.637 5796 (24 hours)

BROADEN YOUR HORIZONS!

TRAINING IN **EUROPE AND U.S.A.**

SALES EXECUTIVES

Generous Besic Selery + 80% Quoie Earninga Guarantee + Commission + Preetige Car + Extensive Training (U.K., U.S.A., Europe)

SYSTEMS SUPPORT EXECUTIVES

£7.000-£8.000'+ Prestige Cer + Expenses + Conus + Extensiva Training (U.K., U.S.A., Europa)

Our client is one of the most respected Computer menulecturers in the World with over 20,000 installations end Group Salea Exceeding \$1 Sillion. They ollar en Extensive Range of High Performance Systems including:

Email Gusiness Systems

Supported from 9 Separate locations

. Further locations currently being planned

Currently ell their Seleatorce is Exceeding Objectives and to maintain their growth rete in the U.K. they need to make further investment in PEOPLE . . . YOUI 1979 Development will take place throughout the U.K. Irom bases in London, Climingham, Manchester, Laads, Edinburgh and Dublin. (Some of these being

in addition to all the above benefits you will enjoy:

Profit Sharing echem Subsidiand 6.U.P.A. Christmas Bonus

Non-Contrib. Pension Schema

PLUS: -- One of the Finesi Salea / Product Training Schemes Available In the Industry

So, il you heve, or ere looking for. Sales or Support experience and feel you are ready for the challenge of a **Stimulating Dynamic Environment** with REAL PROSPECTS for FUTURE MANAGEMENT then Call Now for Immediate Interview.

executive (kingston

59 EOEN STREET, KINGSTON UPON THAMES, SURREY KT 1 18W TELEPHONE: 01-549 6441-9

recollection of the property of the land of the property of the land of the la

ARE YOU FRUSTRATED IN YOUR CURRENT POSITION? **JOB SATISFACTION?**

SDI REMUNERATION? **LACK OF ADVANCEMENT?**

THIS COULD BE JUST WHAT YOU'RE LOOKING FOR

SDI, the largest independent DOS, DDS/VS and soon DOS/VSE systems softwara company in the world has just formed a new group at its Dovelopment Centre near High Wycombe (Bucke), to provide Technical Services to the world-wide markating organisation as well as internally to the Devalopment

If your current job does not offer you the satisfaction and challengos you dosiro then read on to see if you are the sort of person required for this new team.

The positions available era varied and will at times involva visits to customers in ell countries in which SDI operates, as well as the provision of technical services to marketing companies and internally to the Devalopment Centre, initially, there are four positions available:

- 1. Technical Administrativa Officar: who will provide technical and marketing easistence to the world-wide marketing organisation, as wall as the creation and administration of various internal training echemes and procedures.
- Product Assurence Controller: who will provide a new improved level of quality control proceduree, externel to the Devalopment teams' current high standard.
- Applications Programmar: who will design, document and write applications suites for internal

Technical Writer: who will be responsible for updating of curront documentation and creation of internal and user documentation for new products using a computer based texting system,

Successful candidates will also have the opportunity to qualify as Product Specialists and thereby be

You will have the opportunity of joining a dedicated group of professionals who are currently working towards filling the gaps left by IBM's recent 4300 series announcement.

The remuneration package offered consists of:

A brand new building offering an excollant working environment Relocation essistance where necessary Lile end disability insurance schemes

If you possess some or all of the following skills and abititios:

Unlimited cereer growth opportunities

involved in the leunch of new products and features world-wide.

Are a bright self-starting individual able to got on with the job with minimum

Consider yourself to have on excellent understanding of DOS/VS. Have hed some system programming expurience.

Have had some applications programming experience Consider yourself to have an excellent understanding of System / 3.70. Have had some experience with GRASP or GRASPVS (describble but not a prorequisita). Have had some operating experience (also desirable but not a procedusite)

then why not give Robin Bailey a coll on High Wycombu (04st4) 2(tst4 / hotworm 09.00 and 17.30 weekdays, lo lind out more, or write to:

SDI, PO Box 84, High Wycombo, Bucks.

CROYOON COLLEGE

LECTURER GRADE II -COMPUTER STUDIES

This is an opportunity to join a newly-established Department and esset with the introduction of new courses to the College in Computing Candidates must have a page or a minimum of four years computer ex-perience and have experience of COSOs

The salary for the above post is in accordance with the current Burnhem Further. Edecation Award. and is at present. Lectures 18, 24, 28-08, 100-2006. Additions to the solar may be made for appropriate qualifications and the point of antry is dependent on previous relevant opportunes.

Further details of this post and application form to be obtained from the Vice-Printing. The Mounty Jacks In., applications is 19th June, 1979.

£4000 -£7000+ North+Midlands Analysts & rogrammers D81.832.4184

SIEMENS

Technical Translators (German/English)

Il you are e technically minded linguist or a linguistically gifted engineer or programmer. This could be your opportunity to take up a new, rewarding chellange in Southern Germany.

Our Language Sarvices Department, based in Munich, has a number of openings for translators to work on English technical documentation in one of the following areas: Data Processing (herdware and/or softwere)

Data Switching Systems Semiconductors.

These positions are suitable for native English speakers with a sufficiently thorough knowledge of German to be able to piertly the technical content of the Garman source that it is contained. text in consultation with the engineering or programmit

Successful candidates will be offered ell the benefits of large international company, including excellent salares.

Address your application to:

The Personnel Manager, GIEMENS LIMITED, Slemane House, Windmill Road, Sunbilivers, Thames, TW18 7HS

MANAGEMENT & **EXECUTIVE SELECTION**

telephone 01-637 9611 9 a.m.-9 p.m. FRI.-WEDS.
(June 8, 11, 12, 13)

SALES

Quota earnings to £12k + car

A new company formed by an international computer group — leaders in: computing, communications management systems to launch an advanced intelligent terminal system

You must be a true professional with both technical and sales experience

FLEXIBLE AND RELIABLE

Mini/Micro background, management ability, flair to identify new market areas

CONTACT: FAY OGILVIE OR TONY McGRATH 9 e.m. to 9 p.m.

a Rolls-Royce amongst computer systems . . .

intelligent terminals stand-alone/clustered tailored to meet exact demands of the user . .

developed and manufactured in Britain . . . backed by massive human and software resources .

SALES new Mini-computer Company

NORTHERN IRELAND

earnings not less than £12K + £1800 car allowance

This is your golden opportunity to get in on the ground floor of a new venture into N. Ireland.

Operating from their first-cless offices with demonstration facilities based Belfeet, you will be reeponsible for selling their mini-computer/word processor, with all the resources of a major company behind

You should have experience of the market in N. Ireland selling either mini-computers or bureau eervices end be prepered to undertake repld cereer edvancement, es for the right cendidate progression into menagement is assured.

INTERVIEWS WILL BE HELD IN LONDON OR IBELAND

Contact Faye Ogilvie of Tony McGrath 9 a.m.-9 p.m.

Suite 201/6 Albany House 324 Regent Street Landon Wilk 5AA 01:657.9611

MANACEMENT & EXECUTIVE SELECTION

University of Birmingham

THE COMPUTER CENTRE

The Centre elreedy provides a wide renga of local and remote computing facilities to the University. These are now being further extended by the installation of a DEC 2050 interactive system for both teaching and research and by the development of en internel nelwork which wilt have links into the Midlend Universities Computing

To help support these extended services applications are invited from gredustas for the following poate:

COMPUTER OFFICER Operations Group

to essist with the menagement of the DEC 20 instelliation, to provide technical herdware and soltware support in the area of talacommunications and ovarell of epecialised hardware.

Can didense should have management ability and severel years proven experience in the design of digital

SENIOR HARDWARE ENGINEER

Operations Group to be responsible for the day-to-day running of the

technical workshop and the construction and merntenence of equipment esseciated with the

Candidetes should have practical experience of

COMPUTER OFFICER User Services Group

to perticipate in the work of the Group which re responsible for writing and supponing application packages and providing advice, instruction and documentation on the use of the Centre's facilities. Candidates should be sympathotic to the needs of novice users and preforably have expertise in

* stetistical data processino *

ADVISER FOR INTERACTIVE COMPUTING

This new Computer Officer post has been created in the User Services Group to develop the practical

application of + CAI and CAL techniques + The post is lenable for two years' accordment would be welcome. Condidates should have computing exporterico especially in the areas of simulation and modelling techniques using ou-line graphical displays For the Computer Officer poste, e higher degree is

desurable but in all ceses cleer ovidence of previous work successfully completed to essential. STARTING SALARY FOR COMPUTER OFFICERS, ACCORDING TO AGE,
QUALIFICATIONS AND EXPERIENCE, WILL BE

£3775-£6355 (BAR)-£7B21 (from 1.10.7B). AND FOR THE SENIOR HAROWARE ENGINEER ON THE OTHER RELATEO 1A BCALE:

£4333-£7521 (from 1.10.70). Further particulers are eveilable from the Assistant Registrar, Science and Engineering, University of Birmingham, F.O. Box 383, Birmisghem B18 2TT, to whom applications (3 contas) includes

curriculum vitee end naming times referees should be sent by Fridey, 28th June, 1878.

Please quote referense CZ4.



Sir Frederick Snow & Partners Consulting Engineers

COMPUTER PROGRAMMER

with Manegament Potential

We have the need for someone to co-ordinate and control our ainall computing section whose activities embrace both engineering and timencial accounting applications.

The section has a stalf of four and the equipment includes a Prima 300 Computer System and a POP/11/20.

The poar olders excellent opportunities for the use of intletive need loadership in a developing onvironment, and we believe it would be ideally curted to a programmer in his/her early 30s who tes the potential to extend his/her career in a managerial

Il this appointment is of interest places write giving details o your ago, qualifications, experience and eatery required to:

(Staff Recruitment) Sir Frederick Snow & Partners 进行联系统 经收益证据 Ross House 144 Southwork Street LONDON SEI OSZ

Operators/Support Staff: **Contract and Salaried!** Top Rates! UK & Overseas!

South Africa: VME/B, Ops and Support Holland: GEORGE 2+, Ops UK: GEORGE 2+, 2900, VME/B, VME/K, Ops

Our requirements for top-class Operators are continuously expanding throughout the UK and abroad. As one of Europe's leading softwore houses we regard oil these things as important.

paying top rates

providing real job satisfaction

offering good career prospects

For further details please contact Andy Woodham or Grohom Whittoker on Reading (0734) 581258 extension 36 or 46, reversing the charges. Or write to Andy Woodham, Operations Services, ICL Dotoskil. Reading Bridge House, Reading, Berkshire RG18PN. quoting reference CW14O5.

The Computer Professionals



PROJECT LEADERS

£7500 + Car

Rive needs two top-levs! professionels with at loast 7 yaera solid, proven experience at the shorp and, preferebly with most of it on minis

You'll recognise the job doscription - overything through from seles support, systems spuc, liles/iInto besa dasign, lunctionel spec, program specs, project management, implamentation, systems tost, instalation end acceptanca — all to the rigorous stendards our customere have the right to expect:

Our current projects renge from a notwork of 17 small mechines providing on-lins invoicing where it is needed, to multiple ½ megebyte machines performing process control with fult redundancy, to more commercie t epplications such as order processing, stock control, production plenning, isdgers. Languegas -- some depth in either COBOL or FORTRAN.

- We use Hewlett Peckard 1000 and 3000, but doubt il you do.

*** If this witt be you wa're describing In 2 or 3 years time, why not get there with us - we would like to hear from you se well.***

Pleese rieg: MARION PEARBON on BOLTON (0204) 384112

Or write to: RIVATURNKEY COMPUTER SYSTEMS LTD.

BRIGHTON POLYTECHNIC DEPARTMENT OF COMPUTING AND CYBERNETICS

LECTURER 11/

SENIOR LECTURER

(Post t| in Computer Golonce with particular Interest in Program ming Languages. (Post 2) in Computer Science will particular interest in Database

Salery Scales: Sanlor Lecturer C9051-67572: Lecturer 11 64101-66559:

For further details and application, forms, plasse apply to the Personnel Offices, Brighton Polylecting, Moltascooms, Brighton BN2 AGJ, Tol.: (0273) 683656 fra 28377 Cheling date: [5 June 1978;

SHEFFIELD CITY POLYTECHNIC RESEARCH STUDENT -ISTRIBUTED DAYA BAGE

ons as invited from c

Required to essist a team of pro-grammers in the Computer Centre engaged in the Implementation of applications programmes over a very wide range. Considerable use is made ut existing peckuges naw programmes, however being written whenever (uetitled

The team cleo perticipates in an edvisory service. Candidetae should be exparienced and possess ecadamic quellications to at least HND level. The inclusive annual selery ranges from £3994 to £4917 eccording

For further details and application, furth plains contact the gavennel Officer, North East London Polytochnic, 109 The Brotte of the Part of the State of the Sta

COMPUTER RECRUITMENT, TRAINING AND CONSULTANCY

SALES

BIRMINGHAM, CHELTENHAM AND OTHER LOCATIONS THROUGHOUT UK

EARNINGS UP TO £12,000 pa plus car/car allowance

Opportunities exist for both experiment and mu-exponenced seles people throughout the UK to work for a major professional organisation siding Hardwairs, Suffware and related company

Those appointed will have the benefit of excellent management and tochnical support (systoms, ungintering, etc.), it proven product renge and comprehensive training.



Oon Knugge on Worrs. 427(177 (Newsfley 400036 evg. after 7 p.m. THE MOUNT, 1 ST. JOHNS, WITRCS.

NORTH EAST

APPLICATIONS ANALYST/PROGRAMMER PROGRAMMER

BARKINO PRECINCT

An Analyst / Programmer is required to complement development term working on order processing, scaled stock control applications on an IBM System 3.

Plens are currently being made to Install a new tullising both unline processing and database and

The successful applicant must be able to offer Antique portence and a sound RPG if commercial programs beckground on on IBM System 3, estimated involved with oil espects of the hardware conversion and involved with oil expected to work with the minimum of supervision and design of future systems. design of future systems.

Moulinex

c £6,000

Please apply in writing to:

NORMAN LINTON LTD.

19/51 Higheste Rd., NWS. Nr. Kentleh Town Str.) 91/567-9921

Coulsdon, Sunti.

A. J. Walden Data Processing Menaget Moulinox Limited Station Approach (North) PROGRAMMERS

\$16,000-\$28,000 Continuous In-house training Excellent

benefits e.g.

Relocation expenses including return

We are a highly respected and growing computer consulting company, founded in 1968, with offices in New York City, Greenwich, Hartford, Union, Philedelphia end Chicago.

We have openings at most levels in project management, systems design and analysis. applications programming, data base unsign and

We are looking for individuals with 21 years IBM 370 programming experience (or equivalent) who would welcome the challenge and career development of living and working in America for 18-24 months with the possibility of participating In our internettonal expansion on return.

Toerrange en informel interview (expenses peld) on June 14 or 15, write enclosing your C.V. ortelephone (reverse cherges) Roger Bernes from middey. June 11 et:

SOFTWARE DESIGN ASSOCIATES, INC. c/o Royal Lancaster Hotel, London W2 2TY Telephone: 01 262 6737

COMPUTER PERSONNEL APPOINTMENTS LTD. Calear Specialists and Consultants for I.P.MANAGERS, SYSTEMS ANALYSTS, PROGRAMMERS AND For application terms apply to Kikw Street, Birmingham B2 4DU, 021-G43 0951 or let. 01-328 725 t



Senior Programmer (COBOL) Circa £7000+Bonus+B.U.P.A. Berkshire

GAF (Great Britain) Ltd., is the subsidiary of a large international corporation manufacturing and distributing reprographic, photographic, vinyl flooring and chemical products throughout the world. We are looking for an experienced COBOL programmer, preferably with IBM OS experience, to work at our U.K. Headquarters near Heathrow.

You will be working in a small team on a wide variety of eommercial systems and will be expected to take an active part in all stages of systems development.

After 3 months, you can expect to be earning in excess of £7000, and you will also qualify for B.U.P.A., pension scheme, free life assurance and a bonus currently worth around £400 p.a.

For further details and to arrange a convenient time for interview, please telephone Mike Sutton or Nigel Pilkington on Colnbrook 4425 or 3346 between 10.00am & 4.00pm, or telephone Mike Sutton on Wokingham 786884 between 6.00pm & 9.00pm. Or if you prefer to write, send career details to Gloria Ezard, Personnel Officer, GAF (Great Britain) Limited, Blackthorne House, Blackthorne Road, Colnbrook, Slough, Berks,

D.P. MANAGER/ESS iw instalistion Gurroughe iogundar C.M.S. Top Sulary, nerous frings tastaffe, houssie Fachione, £300 per week Systeme Analyst with 2903 TP experience

Essex, 3 months minimum. Immediate start Phone DPS 01-808 1738 ELITERISTANCE (1984-1973) Inclusive of an article (1984-1973) Inclusive of a cardon Alexanor.

The Proprecipies in confunction with insepred Contention in confunction in actual testings a Sheri Courtsa Card in a later in the cardon of the cardon of the courts of the cardon of the c

THE ST. HELENS COLLEGE OF TECHNOLOGY Principal: C. P. Grey, B.A., D.M.S., A.M.B.I.M. SCHOOL OF MANAGEMENT STUDIES

PRINCIPAL LECTURER/ **DIVISION HEAD IN INFORMATION SYSTEMS**

The School of Menegement Studies (pert of the North West Regional Menagement Centre) has a well-asteblished reputation both regionally and netionally in the fields ol post-graduate and poet-exparience menagament education.

This is a senior eppointment with major responsibilities. The division head will be required to lead a group of stell from several quentitative discrplines and to work closely with the School's other division heads. The person appointed will have general responsibility for the N.C.C. Besic Systems Analysis course and for the development of the computing content of all menagement studies courses in the School. He/she will also be expected to contribute to the development of computer etudies in the College as a whole.

Candidates, who will be greductes, must have up-to-dete knowledge of compute based information systems including microcomputers and hold or have recently held e senior position in business in this liald. Teeching experience would be an

Selery: £7,047 to £8,844 (under raview).

Application forms and further perticulars are available from the Principal's Office. The St. Halans College of Technology, Weler Street, St. Halans, Marsayside WA 10 1PZ end should be compisted and returned within loutleen days of the appearance of this seven issement. Pleese quote Ref. No. 1/CW.

screen and nation addressed on IZL 1904A 1128b, HP 2000 (2 x 84bb) and Herris S125 (335kb) computers and planning is about to start for major developments in the 1980s. Applications are invited for the t

SENIOR SYSTEMS OFFICER

Hardware £4101-£6588 and under parlew) To undertake developments in the se of microprocessors, data commun

2 SYSTEMS PROGRAMMER

Further depits and application form may be obtained form the fersions Official Brighton Polytechnic Moules counts, Glighton, 852 401, or being A. H. Manterson of B. M. Balley on 0273-89 3856 2 2 153.

PROGRAMMER/ANALYSTS

We ere looking for a Progremmer/Analyst with two to three years, expenence in COBOL and FORTRAN Interested in working on advanced management information systems and computer-eded design.

These systems are being developed on a range of machines, from maintrame, through time sharing, to minie:

The person we ers looking for should have relevant qualifications and be able to work with the minimum of supervision. Experience of data-base management systems would be an edvantage but is not essential. The post will probably be attractive to a Programmer who wishes to move into Systems Analysis.

Flexitime worked:

Hillingdon is situated to the west of Greeter London, bordere or Bucks and Herts yet offere access to Central London, One third of its 42 square miles is Green Belt.

LONDON BOROUGH OF

o form from the Personnel Officer gloding reference A/51/11 Civic Centre Usbridge, Middlesen Usbridge, Middlesen Usbridge #0589 Closing date: 22 June; 1079



SENIOR SYSTEMS ANALYST INTERNATIONAL INSURANCE

28-35

c.£8,000

Our client is one of the leading UK international insurance brokers with worldwide operations, and part of a British multi-national group. The firm has been among the first in the insurance broking industry to introduce successful computer systems.

You would be part of a small team working in a stimulating environment. Your key lask would be to develop an advanced MIS system with senior management. The scope of the job is wide: VDUs for data capture and information retrieval, word processors, O & M studies . . . Prospects for advancement are good.

To be considered you need experience of on-line systems and a background in programming in a high-level language. But above all your interest should be in the commercial application of computers and in management.

Your name will not go forward until you have been briefed and have given your consent. Please write to me as advisor to the group or telephone:

John Lee, BDC (International) Ltd. 26 Dorset Street, London WIM 3FU Telephone 01-487 2621

NIVERSITY OF MANOHESTER

COMPUTER SCIENCE

shave posts from sandidates passessing goed Honours Oegrees in Computer Science, or a related discipline, whe have had research at industrial experience in. Systems Software, information Processing, Applications or Industrial Applications. It is supposed to undertake teaching at both undergoed/ste and postgreduate levels and to contribute to the Research of the Ospartment into the design and perferimence of application or instead computer systems. Posts tensible from October 1st, 1979 or a deals to be arrange. C4.232-C5.049 p.s. [E4.333-E5.199 p.s. [rampone].

Ign forms treturnable by line 29th), frem the Registref, file University, Manchesier 123

Snamprogetti Ltd.

Senior Data Controller/ Operator

Snansprogetti, International engineering contractors, require a Senior Data Controller/ Operator to control the submission to and the work output of a data 100 RJE link to an IBM 3033 in Milan. The duties include scheduling, trouble shooting and user liaison with other company departments.

Applicants should have had a number of years experience in operating an RJE terminal on a daily basis, together with a working knowledge of OS JCL. Further experience of JES 2 would be an advantage.

Very competitive negotiable salary together with paid overtime and flexible working hours

Applications to the Personnel Manager Snamprogetti Limited, Snamprogetti House, Basing View, Basingstoke, Hants Telephone No. Basingstoke (0256) 61211.

UNIVERSITY COLLEGE LONDON

SYSTEM PROGRAMMERS FOR LINKED COMPUTER SYSTEMS

required by the Computer Contre to join project teems developing soltware for a new service based on several linked GEC 4082 computers. This will replace the existing IBM 360/65 service end provide predominently keyboard terminal eccess to a lergs number of stall and students.

The Contre is seeking experience and Interest in the development of major sub-systems and the maintenance and annoncement of the OS4000 operating system. Saleries will be paid on the ecademic related scales £3717 to £6.108 of £26.1 to £7145, plus a London Allowance of £502. Sultably experienced candidates would be considered for the scale £68.86 to £8452.

Applications including full curriculum vites and the names of two roleress should be sent to Computer Manager, University College, London, 19 Gordon Street, London.

SENIOR COMPUTER **OPERATOR**

CHSLOEA COLLEGE

SENIOR COMPUTER OPERATOR is quited to load one of two ghills in a loll operations group in the College apputing Centre at Fulham Broad

The Centre has just installed a Hatra 125 multi-access installed out computer under VULCAN in addition operations covers an Elliott 4130 multi-linents from anded by a D0P11740 to give multiple access interactive computing this machine will be phased out as the Hains is upgraded A dana cummunications notwork, begad out in Gnoble PACX unit couples tempto users via terminate to the central configurations.

A responsible and well educated persons tought for this poet protocolby with Richnical background and two years operating experience. A minimum of a level Montematics and English required. Conditions of appointment include a freeday week, four weeks holiday, plus one week at both Christmas and Easter including the Bent Holidays, two shill working only, and e-salory hi the range £356-14862 inclusives.

For lumber double and an informal interview connect Alisten Peton of Richard Shopherd on 738 1244, or write to Computing Centre, Cheldea College, Pulton Place, London SWS 6PR

GEPARTMENT OF COMPUTER ECIENCE

RESEARCH **ASSISTANTS**

Applications are invited for two posts of Research Assistant to work on a project that will investigate the design of a time sharing operating system with a user interface similar to UNIX, no run on a number of microprocessors. The recearch is supported by the SRC distributed computing geogrammer Applicants should be separatined programmer, ideally in systems programming with a sound knowledge of operating system design and constituction femilially with UNIX is destrable.

ha posta ara ioi a two year poriod from October 1973, with stanting salarias i this range C3,776-C7,521 p.a. with

Four copies of applications and curri-cule wide should be sent by Finday, Jone 28, 1978, to the Requester, Un-weality of York, Meshigati York, YOT 600, Irom whom further particulars may be obtained Please quote iderence number 13/7079

> UNIVERBITY OF STIRLING DEPARTMENT OF

TEMPORARY PART-TIME PROGRAMMING ASSISTANT

Applications are invited for the above past which will involve working 20 hours per week Outes of the appoints will include maintainers and develop mant of softwars for the Duportmunt's computer and essistance to students. September 2 would be an

Fact time salety will be based on the full-time scale £389-£8180 per an

Further posticulars are available from the Secretory (CW), University of Stitling, Stitling, FKG 64A, to whom explications, together with the nomes of two states, should be sent by 20 June, 1878 An appointment is hoped to be made by 1 October, 1070

London School of SRC and SSRC STUDENTSHIPS

er M.Sc. in Operations Research 1979-80 The course is intended for people whose list degree includes Methemetics to first year university etendard. There are two options within

Mathemetical Techniques o Option B: Operetional Research in

Public Planning . Normal entry regularment Upper Second Class Honour plications to: Gradust idmissions, London chool of Economics sn Belenos Houghton Street, London WC2 2AE by 22 June, 1978 at the latest.

> IBM OS CONOL IMS WOULD HELP USA \$20K-\$30K

Ring Joanne Stone 01-278 6426 (Day) 0865-773839 Evas/Wookanila

HAVAN BUSINESS SYSTEMS LTD Requires en enthueisstic

ANALYST/ PROGRAMMER

matallation collegatering and supervising in

The prince prince skill, and should intiche

but the new indicate high salary up to 1900

par phranomy any tronohis, Pronohon phrapoch and excellent wowood ike b

war your har runk! torrend our Systems and

Programming Program Managers in the real

the of your Hank you carrended our challenge.

inter Lin Cook (van (1) 388 0036 for more debt

Literate Williams (London) Ltd., 38 Western.

culture proposited frequient.

with experience of the Adler & Jacquetd It

Development

Programmers

Sperry Univac have created in European Distributed Systems Centre in Central

London and can now offer excellent career opportunities to highly-skilled Devolopment Programmers who can also work in a marketing environment

We would expect applicants to have extensive experience in attensitive of the

A degree in engineoring, mathematics, or computer science is desirable and

proven success in several implementations is essential, it is likely that successful

For further information contact Valerie Morton, Personnel Officer, Spany Univa

DIVISION OF SPERRY RAND LIMITED

Are youa Systems Analyst looking for

a little seniority?

Computer Consultant

The rewards package is excellent including salaries rising to £12K,car

Sperry Univac Contre, Stonebridge Park, London NW108LS. Tel: 01-965 0511. Ext. 3262.

to 12K

EUROPEAN TRAVEL

* DATA COMMUNICATIONS

* DISTRIBUTED PROCESSING

* MINI COMPUTER SYSTEMS

NETWORKS

ARCHITECTURE

OIBM's SNA PRODUCTS

cendideles would be aged 25+

ellowence and pension scheme.

ll you are then lalk to us. From 1969 we

ulusa Systema Analyst, naidy to take

modyses and designed monecompoler

systems and the development of comma-

ckally-ouenhaled applicational transmissiphion

Part of your new formet senterity will mean

supervising Analysts, hongrip and the trest In them, managing the development and

his/her most causer ship

UNIVERSITY OF YORK

COMPUTER

TECHNICIAN

Applications are invited for the post of Serior Technician in the Capartment of Psychology at Grads 6 or 6. The post will involve work with the Department's misiconquiers (mainly of the POP 11 lamily), their interfacing to portpiteral apparatus including escillinscepos. printers, plotters and to 17 devices to be constructed in the Capartment a electrosic weekshop. The applicant should ideally hove knowledge el. both hardware and software.

Salary of Olada 8 — 13,474, 14,088, of Orada 6 — 13,984, 14,758.

Applications in writing, giving the remes and addresses of two rototees, should be sent to the Deputy Burser. University of York, Mestington, York, YO 1950 Further distant sin excelleble from the Chief Trothoctes, Mi Spaward Tel: York (USOAI 5885) asi. 8 685. Closing the populations is 20 June. 18 1975 notices a large senters.

save grown to become ong at the mest

snaceshilandrespected companies in

out field. Plyblarow we're looking by a first

Your expensive predestably alread include

CTERMINALS

The person appointed will be required to work with a mile of supervision and report to the directors. A defain and travel and customer reletion will be included and a company will be provided. An attractive selsity and commission will be offered commission with a presidents. will be ollered commensurate with experient will accept applications from trainees as expension will Vacancies in two to three months (Imag-

Please apply in writing giving full petalls of qualification

Mr. I.S. Brown, Director,
HAVAN BUSINESS BYSTEMS LID.
Hatton Close, Moulton Perk Industrial Englishment of the Control of the

OVERSEAS OPPORTUNITIES

Our Client, a loading international company in SAUDI ARABIA, is seeking to till the following

SYSTEMS ANALYST

standard end be prolicioni in ICL Hardware/ Selware, COBOL end RPGII Hu will have a minigenman, course appendict on tiscal systems programming and design rising frape and finest recess data base techniques (Rni TOO7)

PROGRAMMER/ ANALYST

Educated to at least O. Level standard and with a minimum of 2 years experience with COBOL, the successful applicant will be producing Micro and Modulai programms flow cheris. (Ref. TOOS)

FORECASTS ANALYST

A graduate with 3 years' experience in hudding computerised methomatical models and university tabilities (Ref. 1009)

Telephone Windoor 57926 (24-hour nneworing)



Programmers-can you teach from experience?

As one of the world's top 2 companies in terms of revenue from computers and associated products, we have won a universal reputation for quality and technical excellence.

Maintaining this reputation, in the face of tierce competition and unprecedented growth, is very targely the responsibility of the dedicated men and women who make up the unique team of that ructors at our Head Office.

They compile and control the courses and seminars that ensure that our sales and support personnel are among the most professional in the field. And in return for this considerable responsibility, we not only pay them well above average salaries, we back those sataries with a tull range of executive benefils.

We're now looking for someone to join

them: someone with experience on a high level language, preterably COBOL, --exposure to Neat 3 would be an asset --necessary to teach our programming, packages and operating systems.

With the added impetus of direct involvement in one of our most rapidly developing areas, your ambition for ever greater responsibility should find all the opportunity it needs for continual progression.

First-hand knowledge of NCR hardware and software would be a distinct advantage but is by no means essential. Please write, with brief career details, to:

Christine Parkinson, NCR Limited.

206 Marylebone Road, London NW1 6LY.

Redifon Simulation Limited are innovators in the dosign and manufactura of flight simulators – in stap with tomorrow's aircraft development and embodying today's computer linked tachnologias – for expanding world markets in civil end military aircrew training.

Software Systems

Designers for

Real Time Simulation

To enelyse, design, programme and lest systems support and diegnostic softwara, including the Executive end VDU Programmes.
Responsible for the timely integration of the various simulated eigraft systems, resolving both communication and technical problems, meIntaining stendards end in general trouble shooting softwere problems.

An engineer would normally be made responsible for the work above on a specific 18 months simulator project and would work as a mamber of a software team.

softwere team.

Applicants should be qualified to degree standerd or by 4 yeers' releted experience which should include simulator techniques.

Knowledge of high level languages desirable. ASSEMBLER essential.

Opportunities exiel bothet Heed Office in Crawley and et our cantra et

8 nighton. Please write to or telephone John Perry, Personnel Maneger — Recruitment, Redifon Simulation Ltd., Gatwick Road, Crawley, Sussex. Tel: Crewley (0293) 28811.

Complete computer systems

PROGRAMMERS SOFTWARE

SPECIALISTS for MINI/MICRO REAL-TIME

SOFTWARE DEVELOPMENT up to £7,500 To join a new devolutional mount in an expanding Company in High

A new production bound to integrate Company products, and is responsible the the design and downlopment of puripherel headlers, communication colleges and special complete/interpreters, using a

Candidates should to llexible and self-motivated with a degree or equivelent qualifications, and a minimum of three years veried saltwere

experience on mini-computers and/or microprocessors Considerable reproductivity exists to broaden your experience and progress your career in a challenging unvironment.

For further information, pieces ring or write to Peter Brown, Menager, Computer Systems Interface Group, Instron Ltd., Coronetton Rond, High Wycombe, Bucks, Tolephone High Wycombe (0484) 33333.

Four weeks' hollday • Non-contributory Pension/Life Assurance Scheme Flist-class amonities Subsidised canteen Help with islocation costs.

Queen's Awerds for Export and Technological Achievement



CHEFREY COFFEOR

AH SSRG STUDENTSHIP

has been exercised specifically fer work with the Schools Council Project Computers in the Carlocalum. Applications for this studentship and avoided to undertake research into only of the verticus specific of this multi-disconlinery project. Possible every council ber to project. Possible every council ber to project. Together with the project of CAL in Improving assemble the role of CAL in Improving the council of the cou

Firther difficient of the project lengths of the qualitation per evolution from the control of t

OXPORO UNIVERSITY COMPUTING SERVICE Try has ICL 2990 and 1809A membrano computers with a number above from and processors to previde batch. MAC and RJE facilities.

SHIFT SUPERVISOR

TRAINING SUPERVISOR has been elected initiately to outcome the expedition of the stall person appointed will be expected to back up the exhibition of the stall person appointed will be expected to back up the exhibition of the stall person appointed the person appointed to the stall person appoi

both pothers candidates will be superted to have several years supertained in more with professibly at least one year of supertence with VME (6 or live years). Does as of a scale from EX 720 ES,205 per annum turidal ministry), with a serior of ES2 p.s. for the Shill Supervisor post.

To chains and application forms, which should be returned by 20 June 1879.

Uniord University Computing Service
Oxford OXE SHILL Tel: 0855 56721 till be held in the week boginning 2 July 1879.

ASSOCIATE (COMPUTERS)

HERIOT-WATT UNIVERSITY

Department of Electrical and Electronic Engineering

RESEARCH

A vucnity has miscul for the five year appointment on a research purpose association dealerses. Special purpose association dealerses. Special purpose hardware is being built and interfaced to a PDP. (I computer unit applications are method from any possible with tescerch experience in the computer sellents are method with to participate in this advenced project in state of the art information systems. Another these and controllers associated and project in state of the art information systems.

Selery scale in especial to be £4333-£5199 with alfact from tel October, 1979.

Intermal conjutrice may be made to 0r. P. W. Foulk, telephone 031-226 9432, set. 138. Appli-cation terms may be obtained term the Staff Officer, Heriot-Wett University, Chambers Streat, Edinburgh, EH 1 1HX. Ref. 33/ 79

SENIOR LECTURER

IN THE DEPARTMENT OF COMPUTER SCIENCE

IN COMPUTER

Applications are invited for this post which is evisitable, immediately. Candidates should have a good first degree and previously a higher degree in Election Engineering of some relegied disciplina and also populaterable as personal and also populaterable as a personal and also populaterable and also populaterable and circuits are yet tests. Microphyloseour lusting, Option sections techniques, Memory devices porter and Microprocessor Design. Option senter Microprocessor Design. Option section to extend the section of the section of

RSIRS RECITION SIMULATION A member Company of the Reditution Organisation

Up to £8,000 p.a.



A PROGRAMMER

is required to implement I; a BCPL compiler and 21 the GOS (BCPL) determining package on the CONTROL GATA, 7600 at the University pr. Meint-besier Regional Computer Centre.

The appointment, which is jointly birded by the Borth Wastern Highward Art Catlery Service and the Martin Chicago.



HELLA AUTOMOBILE EQUIPE BANGUEY, NORTH OKON

'PROBLEM SOLVING' PROGRAMMER For an initial 1.2 months, contract, we require the services of a PRIDORANIMER. TRAINED IN ASSEMBLER LANGUAGE, it take responsibility for the standing and decreasion of the administrative systems, currently programmed on to out Misdort. 880/48 equipment: This post could sust contract keep to start or develop their contracted supersons.





Do more interesting **Projects** always attract more interesting Deople?

If you'ra e progremmer with enything from two yeers experiance upwerde, come end telk to us. We'll quote chepter end varse of how your experience could give you more veriaty, more involvement end more reeponsibility than you've aver imegined for yourself. At Softwere Sciences, we cen justifiebly claim to have more than en everage shere of interesting end chellenging softwere

For exemple, we're implementing the largest single turnkey project ever awerded to a UK Systems House. We in fact heve over one hundred projects live et any time renging across the commercial, scientific, government and defence fields. These include top-level consultancy assignments on most machines, demending softwere production and a growing portfolio of turnkey essignments on a veriety of minis and micros. All of these offer a unique breadth of exposure to different kinds of hardwere, operating systems and languages which makes for e very special environment with the computer industry.

Also, we're handling advanced R & D work on compilers, progremming tools and system development aids that will serve the computer industry for the next decade.

On our paople side, our record is equally distinguished. It has, and alweys will ba, our conscious policy to select men and women of exceptional ability, end to develop their ability through close involvament in e wide variety of work.

We'd like to meet some more talented individuals, and to olfer them the rewards that e high degree of personal ebility cen commend with us. The length and breadth of experience required varies with the individual needs of our project work - but the veriety and scope of our projects ellows for openings et all leveis.

The one thing which all cendidetes should have is the desire to succeed end at Software Sciences you will be given the opportunity to do so. If you have this desire end the ability to tank with the Market's leaders, then a sensible step would be to talk with us about your future embitions, initially by phoning SARAH CHAMBERS on the following number. Alternatively you may prefer to write to her at the address shown below.

Software Sciences Limited

Abbey House, 262/292 Feinbolough Road

Farnborough, Hante Telephona (0252) 44321

Programm€rs 2 years+ Experience Hampshire Cheshire

Wiltshir€

BE YOUR OWN BOSS

£5500

£8500

An exceptional opportunity is available to a limited number of expariencad, competent and ambitious programmer / analysts or sales people throughout the U.K. who have some minicomputer and business applications experience.

If you feel you have the ability and strength of character to own your own business, but are handicapped by only having limited capital, then write to us now with full C.V. addrass and homa telephone number. All replies will be dealt with in tha stricteat confidence.

If you qualify for this scheme, very aubstantial finance and management facilities will be pleced at your disposal for only a nominal capital investment.

High fliers contact us now at Box 1027. Computer Weekly.

VON SOUCATION COMMITTES

incipal G f Hild. JP MA MAIN Aunications are invited for the po-

LECTURER GRADE I IN COMPUTER STUCIES, DATA PROCESSING AND STATISTICS

in the Department of Business States to desire from September 1, 1979. The successful applicant will be returned to look these subjects mainly to BEC General end National Organisa Collificate causes Candidates must be subjected to a subject of the subject of th Cellificate courses Candidates must have a working knowledge of 8ASIC. COSOL and PLI pegisimmung lengunges Professibly applicants should have some an perience of teaching and the port may be of jumises to a centificial washing to obtain a first peat in educates.

The present select is E3.182 to C6.334, subject to review from 1st April 1978, with a commercing select dependent on qualifications and industrial or leaching experience.

further perticulars and forms of application can be obtained from 19 Principal, Barnstaple, Caven

UMIST MULTI MICRO PROCESSOR

ORAPHICS RECEARCH A vacancy shints in the Microproces-sor Engineering Unit of the Department of Electrical Engineering and Elec-tronics for a Research Assessmit to work on a special purpose multiprocessor graphics system. The sectoseful can-didate will have experience in digital hardware design, experience with microcomputer or microprogrammable microcomputer or microprogrammable hardware, and prolainably some pregramming expenence. The objective of the issearch is to produce a high performance princed circuit beat disposit system which rolled an dedicated herdware units to perform fast routs searching.

Initial salary will be up to £5681 per

Initial salarty will be up to £5681 per enrum and the appointment will be let two yours in the lirst instance. The successful condidots may be able to registe to a higher degree. Write for an opplication form on during real results, quoting reference EEE/88 to the Register, UMIST, P.O. Box 88, Manchester, M60 100, to whom they should be inturned by the 8th July, 1979.

COBOL

PROGRAMMING

LECTURERS

Salary Negotiable

Vacencias exist for or panonced Programmers to leach COODL to students of Holborn Tutorial Collage.

A generous negotiable salary linked with other tringo bon

Holborn Tutorial Cullugn 14 Adam & Evo Mows High Stroat

Konsington London, W. 4

Tolaphona 01-937 0442

UNIVERSITY OF LONDON

SENIOR ASSISTANT

LIBRARIAN -

SYSTEMS ANALYST

A senior Assistant Libraran — Systems Analysi is required to davelep, imple-ment and maintain computerland housekeping services for the Ubrarus of the Unwarelty Candidates should be

Salary in Grado IIS range of Sans

Purcher peniculars eed appliceUes form obtainable from the Personne Office, Uelversity of London, Sen sta House, Melet Straet, Londor WC1 7HU. Tel. 01-238 8000, est 16. Closing date 22nd June, 1278.

BURROUGHS

L9000

OPERATOR

Required for leading Weel London Auctioneers end Estele Agents beed in W.12. Selary nagotieble.

Please contact Will-motts, 01-743-4444. Ref. TMHM for further minutes

Please write or telephone

Information

The Scientific Oivision of ISA-UK uses a

scientists and oughteers within Philips

maintenence of a large circuit enplysis

package used extensively within the

Philips Group of companies. This will

involva some travel, normally of ahort

2. To join a learn providing support for

Includos opplications for PCB layout.

Cendidates should have a degree or

numerically controlled machine to ols and

equivelent qualification together with two

aeveral CAD/CAM packagos, This

gonarni graphicol dovicos.

duration, both in the UK and to Europe.

Industries. There are currently vacancies

for Scientific Programmers/Anarlyats in this

DEC 2050 computer to provide it

1. The support, promotion and

limesharing computing survice to

PHILIPS

Scientific

Programmers/ Analysts

Scientific Computer Centre-

Croydon

yours' FORTRAN exportance preferably

quined working in a large scientific project Experience of DEC10, DEC 20 or IBM 370

software and CAO/CAM applications

ramminicate clearly with other team

members and users is of importance.

would also be an advantage. The ability to

The salary will be of interest to applicants

currently earning £5,000 + and banefits

includo 23 days holiday, penalon achema

stall purchase scheme endessistance will

If you would like to discuss either position

01-688 7766 extension 2574 or contact

Officer, ISA-UK Personnol Dapartment

Vulerio Apps, Oivisional Personnet

City House, 420-430 London Road.

L'orycloir, Sinray CR9 30 R, lalephone

01 -689 :: 1 GG uxtension 2034, for an

andication form.

rolocation where appropriets.

please telephone Or. Sembles on

Systems and Automation

Turn Real Time Mini on for up to £10,000. Or more

Do it my time you like. Phone in the morning, afternoon, evening, 11 p.m., weekends even. The number is 01-836 9719. Failing that, 01-836 9882, Ask for Heryl, You'll get an answer. In the flesh — none of this answering machine stuff.

But the please, he sure you're who we want to be turned on by PROGRAMMER, PROGRAMMER/ANALYST, SYSTEMS DE-SIGNER of PROGRAMMER, SOFTWARE ENGINEER, PRO-JECT MANAGER of HARDWARE ENGINEER.

With at least a year's Real Time Mini or Micro experience, any configuration. Ascembler and/or high level language.

DEC experience - especially using RSXII, RSTSE, Intel, Motorola Micrit or Interdata 12 - is even more of a turn-on.

And a degree as well - eninputer science or other mathsorienteted subject - could cause distinctly heavy breathing.

What do you get for all these answers to a maiden's prayer?

Not just money (see above). Also very interesting applications. Commercial business systems, Customer support — various roles. Process and applications are specially applications. roles, Process control, Flight elmulation, Micro processing Word Processing, Communications — tele and otherwise, Message switching, Lecturing and training, Military systems, Automatic test systems.

Locations London, Home Countles and further affeld - In cluding E. Europe.

Ring Reel Time Mini'e 24-hour, personal answer hot line now 01-836 9719 or 9882. Day or night, ask for Beryl McLaren.

Jupitor Computing Appointments (Recruitment).
(REAL TIME MINI'S PLACE)



Computer Appointments (Real Time Min's Place) Suite 41/42, 12-13 Honrietts Street London, WC2

DEPARTMENT OF MATHEMATICAL SCIENCES

Lecturer Grade II/ Senior Lecturer in Computing

(Dete Proceasing end Systems Analysis)

Applications are invited from money women, suitably experienced and remisland in the tights of data processing, communical systems analysis and Salary within the range [4101-17]) (Bei)-1.7572

lession form and further details from the asistant Olrector end Chief Administrative Officer, Trent Polytechnic, Burton Street, Nettingham. Forms to be returned as seen as

TRENT POLYTECHNIC

NCR COMPUTER **OPERATORS**

required at BENTALLS, the KINGSTON-beard group of stores.

Working on our Criterion 8450. The successful applicant will have at least six months inpending

kne evening shift work and occasional evertime Albeinvolved.

Siery £3,750 excluding any state attowards

lite or talophono the.

Group Personnel Controller BENTALLS Kingston-upon-Tiranes 01-548 1001, oxt. 2110

Bentalls

Systems Analyst

Salery £6,553 to £6,663 (pay award pending)

Programmer

Commencing selery around £4,500 (pay award pending)

The Computer Section is responsible for developing and maintaining o veriety of systems on the Council's 1902T installation with communications equipment. **WE SEEK**

* ANALYSTS with

- experience of investigation, dasign, specification oxperionce of ICL 1900
- suitable qualification
- local government experience * PROGRAMMERS with
- 16 months' experience in CO 60L or PLAN reportence of ICL 1900

WE OFFER

- * A salary of £5,553 to £6.653 p.a. inclusive lor
- A sterting salary of eround £4,500 for program-niers on a scale rising to £5,394 p.s. inclusive
 Annuel leave antitlement of up to 22 days plus 1 day's extra teave per month.
- Pansion achamo.
- Work in an interesting variety of applications. Current developments include systems dealing with superannuation records and children boarded out with loster parents. Future developments will include systems for Libraries and Collection and Recovery of Reles.

Please contact John Allsop, Borough Tressurer's Ceportment, 22-26 Clements Road, liford, IO1 1BD, telephone 01-476 3020, extension 308, for an application form.

Further details from Garald Rosser, Sanlor Analyst, 01-475 3020, extension 124.

London Borough

NEWSFLASHI 80L - RPO II - PL/I IBM - ICL - MIMI'E RGENTLY NEEDEOL

PROJECT MANAGER.

artuations Wanted

SUSINESS ANALYST inn I-lingual English/Garmer tion sident man Vienna 2006s Challerger aw appointment in W Europe Box 1021, Computer Wookfy

JUNIOR OPERATORS

LONGON AND HOME COUNTIES We now have a number of junior vecancios requiring from 8 months' exporience on IBM or ICL computors. Vecancies exist in W.1, E. LONDON, HIGH WYCOMBE, MITCHAM and BROMLEY Promotion chances ere good. CW23/1 Tricie

OATA CONTROL CLERKS

To £4,000 Inc. A major IBM OS installation in a multinational organisation needs data control darks to work a 2-shift system. A minimum of one year's experience required and JCL knowledge would be an adventage. The lirm offers excellent working conditions, 6UPA, CPS, subeidised restaurant, etc. CW23/2 Tricie

OPERATORS & SENIOR OPERATORS

To £6,000 inc. If you have IBM OSVS1 experience, then apply now. Gaing one of the lergest insurance companies in the country you will ba wall carad for. Non-CPS, 4 weeks holiday and comprehensive sick pay scheme. CW23/2 Tricie

OPERATORS TO SHIFT LEADERS

£4,000 to £7,000 lnc. This prolossional Service Gureau conteinl knows how to Ireat its steff! Excoloni shift rates and a root chance for promotion. A minimum of 9 months' ICL Git or Gill or 2900VWEM experience is essential. Lovely perks include 21 days hols, CPS ed rosteurant end GUPA schome

CUSTOMER SYSTEMS SUPPORT

C. LONCON c £6,500 + CAR This major International terminal and mini manufacturer requires three first-rate Sys tome Analysts to edvise, design and install a variaty of Real Time applications beset around Mini or O E.M. Maintrame Computers. Excellent opportunity for advence ment and top company parks. CW 23/5

FREELANCE PROGRAMMING **VACANCIES**

UK TO £300 PER WEEK
GEC RPGII/Carel 66 Gucka
RCL GII/Fikeleb Harta
ICL 2980 TP VME8 S. Cassl
ICL Sys. As. Selibuli
IBM Cabal/008/CICS London 3 months 6 months 3 months 3 months

OVERSEAS TO £450 PER WEEK

903/VSAM/PLI Menich I year Sys. 10 Cany, 2960 Belglum 6 monits 2904/Cobel German Amslerdam 5 monits or Outch ees. Halland 3 monits+ ASSEMBLER Tele. Sys. BKD.

RING IRENE on 01-995 4148

lecruitment Consultants

UNIVERSAL COMPUTER ASSOCIATES LIMITED

01.995 3883 (01.958 6138 Evenings) Data Express House, 3 Prospect Place, Heathfield Terrace, Chiswick W. 4.

TYLIN PEOPLE

SHIFT **LEADER**

£5,400 incl. + Overtime + large company benefita LIVERPOOL

Due to promotion, a unique opportunity exists for an experienced operator or programmer to lake responsibility for the operating of an IBM System 3 shortly to bu ungraded to a System 34. Potentiel cereor advancement le limited only to ability for he/she would be expected to participate in the installation of the new machine and assist in the design and implamentation of a new VDU besad eyatem with particular rosponsibility for user

department procedures. Applicants should be educated to A-level standard end heve the ability to communicate alfactively with users. Experience of a smell . IBM installation would be an adventage but not essential es full training will be given. Rel. CW23/2.

CONTRACT STAFF

£12,500 p.a.

TWO - IBM 370 programmers Experience of PLANCODE useful MAKCHESTER **OEC POP programmers** UVERPOOL IBM 32/34/3B programmers IBM 370 progremme Good accembler essential

DOS or OS experience CROYDON OEC POP programmers All operating systems

We have many other contract opportunities not only with externel clienta, but working in house et one of our regionel computer centres. Remember, you future lies with the aweeteal company in the world, so phone today.

Thase are just a faw of dur current vacencies, lor further deteils contact:

CHRIS TILLBROOK



A division of Tylin Management Syst Ltd., Leon House, High Street, Croyd CRS 2NH, Tel. 01-880-2323

SYSTEMS STAFF

to £7,500

MINI COMPUTER **TURNKEY PROJECTS**

Croydon & Meraeyaide Oue to increasing activities in the Turnkey lietd, an established computer services company — a subsidiary of an international Group — requires the following staff to form an additional project team:

I Project Leader
2 Senior Programmer / Analysis

2 Leading Programmars years' experience. Preference will be given to cendidates with a knowledge of mini computers (IBM 32/34 or OEC celions are invited from pro

The company offers excellent working conditions and benefits which include four / five weeks' holiday, free or lile assurence, and preferential mortgege schame.



A Member of the TATE & LYLE GROUP

Rel. CW23/1

Making systems really work for the business.

As a major International manufacturing company, we realise how vital new computer hardware and systems will be

in the 1980's. We know that our ability to compete successfully in the future depends on our present level of investment.

The first phase of this investment is almost complete, we are installing a powerful range of mini computers linked to an IBM 3031 mainframe. The IBM is already operational and the whole system manufacturing business but a limited will soon be going live.

Phase two could involve you. Even more important than the hardware Is the talent, experience and know-how behind It.

Currently we need to strengthen our teams with the following people:

Project Co-Ordinators **Senior Analysts** Analysts · Programmers Operators

The range of appointments means your systems experience could be Comprehensive experience in a systems background would also be

We are offering a rare and exciting opportunity to make computers come alive in a manufacturing industry and we benefits include a preferential car scheme. want to talk to men and women who can meet this challenge.

The nature of the projects means you will gain valuable experience in: database systems, distributed processing, paid where appropriate on-line networking and process control of mechanical equipment. You will be providing vital initiative and guidance to the business, whilst enhancing your knowledge of the latest advanced technology.

What about the financial rewards? For Project Co-ordinators the starting salary is up to £7,000 p.a. For the other positions the starting salary is up to £4,900 p.a. We also operate a productivity benus scheme which has provided substantial rewards. The many other

Our location in the north west of England is convenient for major citles, the coast and superb countryside. Generous relocation expenses will be

So, if you would like to join a systems team with a vital role to play, write to Whites Recruitment Limited, with details of age, qualifications, career and salary progression to date, who will forward

your application promptly. R. D. Taylor, Regional Manager,

Whites

Recruitment Phoenix House, 45 Cross Street

Manchester M2 4JF. Please quote Ref. No. 2204 and list tho namea of any organisation to whom your lattar may not be aant.

COMPUTER OPPORTUNITIES IN YORKSHIRE

flere's a job for you as a SYSTEMS ANALYST RN641. £5682-£6684 p.a. pay eward pending.
You'll be based in Bradford so you can live within

minutes of the beautiful Yorkshire Deles and National Park.

You'll be working with the letest equipment → our new 3M Byte I.C.L. 2970 running under VM E/B. You'll be on important part of a project team helping to design, test and implement computer systems using your initiative, demonstrating your problem-solving communicative abilities.

If you've at least 3 years experience in computers preferribly with a programming background we'd like

Or how about e job ae COMMERCIAL PROGRAMMER RN 642 £4635-£4662

Writing COBOL progrums on our I.C.L. 2679. You'll be working on a wide ronge of Commercial

It's a job with promotion opportunities either within programming or into software or systems depending on which path you wish to follow. You only need years' experience — our excellent training facilities will soon develop your potential.

For either of these posts if you need to move we'll give you generous relocation expenses. You can sise take advantage of bridging loan incilities and lodging nilowances of make your move easier.

The authority has a good pensing scheme.

Application forms are evallable from the Regional Personnel Officer, Yorkshire Water Authority, West Riding House, 87 Ablen Street, Leeds LSI SAA, Tel: Leeds 44 8201 Ext. 269).

To be returned by 18th June, 1979, Quoting the

Yorkshire W Water W

North Staffordshire Polytechnic, Computing Services Black Heath Lane, Stafford

New Programmer/Analyst opportunities with a major multi-processor computer system

Chief and Senior Programmer-Analysts required for system and network development with main Iramos, mini and micro

Programmer-Analyst appointments are also avoiloble for suitably qualified poreonnal who may have graduated recently or have ilmited experience in systems network development

Chief Systems Programmer-Analyst £5727-(67D2 p.a.

Senior Systems Analyst, Progremmer Analyst, Network progremmer Analyst—£4773-£5668 p.a. inclusive. Chief Applications Programmar Analyst - £6232-£6342

Programmer-Analysts--£2823-£5073 p e. inclusive

Initial salary will be within these ranges depending on

Application forms and further particulars from the Establishment Officer, North Staffordshire Polytechnic, College Road, Stoke-on-Trent SP4 2DE.

ST. BARTHOLOMEW'S HOSPITAL West Smithfield, London EC1A 7BE Programmer

Applications are Invited for a programmer to work in the section of Scientific Computing and Statistics in the Ospertment of Medical Electronics. The work will Involve e number of applications of multi-computers to a range of ecademic and clinical problems in the City & Hackney Heelth District. A degree and previous expensions of Fortran programming are desirable. Selery: £3,840-£4,829 p.a. Inclusive. For an application form please write to or phone that Parsonnel Department on 01-800 9000, Ext. 3320, quoting reference PTA/231.

MYRIAD

(2 shifts — NO NIGHTS)

NORTH-WEST LONDON

A very interesting operations position has now arisen with our client, a leading international manufacturing and marketing organisation based in North-

The successful applicant will be able to offer at least two years' sound IBM System 3 or IBM 370 operations experience and will possess the ability to adapt quickly to a busy an stimulating environment.

Current hardware comprises twin IBM System 3/15's with extensive on-line systems, scheduled to be upgraded to an IBM System 38 within the next year. At present the installation operates a two-shift system covering the hours 7 a.m.-II p.m., five days a

In addition to the very competitive starting salary the company are able to offer all the usual benefits including a subsidised canteen and four weeks holiday as well as a very good discount on company products.

Ref. NWI/0706/CW

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y IAA 01-353 0981 (24 HOURS)



SYSTEMD SELECTION 22 5 West

Our client requires a Systems Analyst to work on on-line commental systems. DEC ax penenco an advantate: Ref. 1155

PROMESTICALLY. LEED!

A locrative self-teranency productivity payment is offered by our chant who are connectly installing now ICL equipment. Cohol na-

1-11 (15) 1330)

PROMITE LANG.

ha saikill NOTTH TELL

A sulsidised mortgage and relocation expenses. Cobol or Assumbler experience with en IBM beckgroum! would be considered ideal by our chant.

REAL-TIME MINI

SOFTWARE SPECIALISTS

o Computing Ltd., as an autopoint at UK based software linuse

the Company has experience of carrying and property in the Inflowing

EASIGSOFTWARE - Operating Systems Compilers, Linkers, Dobug Parkages, Year Fabrers, Device Drivers

COMMUNICATIONS - Tolephone Systems, Message Switching, Data Collination, Constitutions, Learning

Profiles Control
bilinging — Outstation Sanchheur, Materials Pesting

meskos at at lessi and mun-imputer in imenicompute Mismerelephone Mr. J. Jarvis

oran Computing Ltd.

LOUGHBOROUGH

UNIVERSITY OF

TECHNOLOGY

ENGINEER

OF SCIENTIST

Applications are invited for a LEC-IMESTIP in the Department of En-photons Production from graduate en-photons research experience, paragraph in the inequality with in-fective production of computer tech-less the applications of computer tech-posity to production control, processes or admissibility and production of the second of the actual production of the production of the second of

Saler, within ecolo E4232 to EB462. Further details and application form from Part Johnson, Establishment Officer, rot. 79/18EN

Puzzle Answer

IF n equals the sum of the 12

n must be a multiple of 12.

 $\frac{3}{4} + 10 + 11 + 12 + 13 = 84$

the basic distribution

pattern is shown below.

which teads immediately 2+3+4+5+6+8

pers used, than 8x = 2n. and by =2n. Thiamaana that

28 Maddox Street London W1R 9PF Telephone: 01-629 5932

The Conseny possesses ha own PDP 117.3-d computer which it uses

chare in 10 tweeto dovelopment

Special should have a sound in the state of tend-tene systems and

THE UNIVERSITY

OF LANCASTER

COMPUTER SERVICES

DEPARTMENT

PROGRAMMER

The department is to Install an ICL 2960 in June 1979 to run initially under OME/GEORGE 3. The Systems Programmer will develop VME/K sad/ or '906 solswers to elicat a donaction to the switing North West Universitias' Network. A dagree or equivalent qualification is racessary end a knowledge of large operating systems and/or communications would be an advantage. elihough gradus ide with experience as a computer user and with experience as a computer user and with eninterest in systems programming will be considered.

Salary. OR 1A (4232-C1148 funder

Further periodists may be obtained function reference L141A) from the Eurobishmont Officer, University House, Badrigg, Lincester LA14YVV to whem applies tions 111/2 copte street, when spelies tions 111/2 copte street, and the sent rot later than 30 June, 1978.

HARLOW TECHNICAL COLLEGS
GOILEGE GRIE, THE HISTORY
HARDWITH HARDW 201341
MATHEMATICS AND EGENCE

LECTURER GRADE I

In MATHEMATICS

opposition of the source post considered conditions the source post control from September 1978. The lebtures is required to leach control control from the matter to GCE TO leave and TEC.

matics for GCE O level and the Engineering collises, regarding with computing for the CRV and Bullon AA?
Certificate: Reseal, experience in the lett of computing is demanded. Servy scale 12, 8 245,256 (gives 150 London triuspy).
Application to limit and further, benefits gottomistic from the figurescale.

£6,000-£9,000



NORTHERN OPPORTUNITIES

等。民間·自己的學術。在特別的自己的學術。 自己的學術學和例例可以則然可能的學術

Our thent requires Programmers of all levels with Basic or Dibol experience to work on DEC equipment in various installations in Irelant, Ref. 1158.

等電視機能能够能能能

Antiff White To expend

Subsidisad inortgage and relocation expenses are offered to successful applicants with IBM / Cobol experience. Rel 1139

了是自己的AST 的基础的图象和数据编码 rate that the same THE ELECTION

A DEC installation requires Systems Programmas with experience of high level language and a good working knowledge of operating systems.
Rel. 1153

MARTINET THE YEAR

Systems Programmers are required to work on IBM equipment IMS OSVS or DOS VS

SVETERIO ARBITETO

10 2/20

Dur client ollers e lucrative house purchese scheme to successful applicants with Univec experience. New installation Rel. 1D21

AMMOVIE PROPERTY LAMES. 1933 \$ 1634**11349**

Dur climits require Analyst Progremmers to supplement project team for expansion of work. Cobol experience required Rel 1065

FOR OETAILS OF THESE AND OUR OTHER VACANCIES PLEASE CONTACT JOAN JOHNSTONE 143/4 ROYAL EXCHANGE BUILDINGS, MANCHESTER M2 061-833 9341/6 (24 HRS.)

OATA PROCESSING RECRUITMENT SPECIALISTS

Computing ! Services

CHARLES AND TAKE

TO 57900

Expanding company requires Analysts to work on IBM equipment in a pleasantly situated installation in the North-West Rol 1066

REMAINMENT LEANING SEE THE SHOW

Analyst Programmers with ICL/Cobol experience are required by our client to work in nstaliations across the North.

CYSTEMS AMALYSTS TO 96200 LEEUS

Relocation expenses/excuflent bonus scheme. Our chant is at present installing new ICL equipment and developing existing sys. tems. Rel 1073

COMPUTER STAFF

XOREN Coras lumpair Eireann (Irelami a Hational Transport Company) wishes to recruit a number of people to join an experienced team of computer professionals. The positions are based in Dublin

appairited will work on advencer and exciting development projects appairited will work on advencer and exciting development projects. The company uses a variety of computer hardwere — IBM systems 37D computer running under VS/1, and several DEC 11/70 and 11/34 computers, running under RSX 11/M.

SYSTEMS DESIGNERS

The Systems Designers will pure an exponenced systems group, with responsibility for developing and implementing new systems. The successful applicants will have a sound knowledge and exponence of systems design and will have had responsibility for developing and implementing systems. Exponence gamed in a large organisation or software house would be advantageous Experience of programming is also desirable. An accounting qualification or originating degree or approximate would be presented to software. quivalent would be perticularly appropriate.

SYSTEMS PROGRAMMERS

The Systems Programmers will assist in maintaining and developing the operating systems in the installation. They will have a keen inducest in the technical aspects of computing. A degree is Computin. Science of a similar qualification is desirable. The successful applicants will have experience of operating systems in an IBM (370) and in DEC [RSX-11M] maintenance.

PROGRAMMERS

The Programmers will have a good experience of up to two years' duration. The main programmin longuages used are. COBOL. ASSEMBLER, FORTRAN IV plus Experience in writin teluprocessing / rool-time sultware will be an adventage.

TELEPROCESSING ENGINEERS

The expansion of the tolephocossing network has generated a need for the appointment of two grothints. Electrical Engineers who will be members of a term concerned with the selection, installation and operation of an expanding range of equipment. The positions should be of interest to computer professionals who wish to be in the fereiront of computer systems development using State of the Art techniques. The saluries for these positions will be appropriate to the qualifications and expensions will be appropriate to the qualifications of employment successful applicants and the responsibilities of the work. The general conditions of employment include contributory superennuation and widow's and children's pension achieves, a medical include contributory superennuation and widow's end children's pension achieves, a medical include contributory superennuation and widow's end children's pension achieves.

Applications which will be treated in confidence should be sent by 30th June to: Staff Relations Monagor, CORAS IOMPAIR EIREANN, Ireland House, 150-151 New Sond Street, Lendon W1Y CAC England

COMPUTER **OPERATORS** £86,18 p,w

(inclusive of shift allowance and aupplement) phonodisc Limited, part of the International Polygram Group of Companies, manufac-tures and distributes records and pre-recorded tapes for merketing Companies whose labels include Philips, Polydor and many others. We now need an experienced Operator to work a three-shift system in our Chedwall

Heath premises:
You'll be joining a busy team using an IBM 370/146 with DOSS/VS. POWER and You'll be joining a busy team using an IBM 370/146 with DOSS/VS. POWER and CIOS and will become involved in the general operating of the Computer and CIOS and will become involved in the general operating of the Computer and CIOS and will be become involved in the general operating of the Computer and CIOS and will be become involved in the general operating of the Computer and CIOS and will be become involved in the general operating of the Computer and CIOS and will be computer and cios and

monday, Figure 18 27. 18 p.w. and E11 shift allowance and phase II authorized and selection and aick pay-scheme, annual and altendance bonuses, 24 benefits include pension and aick pay-scheme, annual and altendance bonuses, 24 deys holiday in 1980, discount on products, staff dining room, std.

For an early interview please relephone:

Aligon-Pricham on 01.890 8088

PHONODISC LIMITED

Grove Road, Chadwell Heath, Nr. Between Bases and phase II authorized and alternative products.

TIONS OR WOULD LIKE TO ENQUIRE ABOUT OUR MANY OTHERS PLEASE RING ELEANOR OR CHRISS ON 439,7551/0 of 437 0730 UNTIL 7.00.

CROSS STREET MANCHESTER

STOCKBROKER

RSX - PROGRAMMER

teading London stockbroker requires FORTRAN / MACRO Programmer with expenence of PDP II RSX IIM systems.

The successful applicant would work on both commercial and rasearch programs. Salary is dependent on experience and is linked to an attractive bonus system.

Phone or write to

Michaul Oliver KEMP-GEE & CO. 20 Copinell Avenue London EC2R 7JS Tel. 01-600 7595

eath on the contraction were Weddinions and the second seco

TELECOMMUNICATIONS CONTROLLER

Experience in international telcommunications and trans-imission. The ability to establish and service a computer network is required as the initial took is to bring 10 new sites on line: Previous experience in organising and liaising with carriers, herdweer menufacturers and international PTT's desirable. Some construction or services are computer systems. tesirable. Some construction orientated computer systems

SALARY OFFERED FOR THIS POSITION IN EXCESS OF

DOS TECHNICAL SUPPORT PERSON TO TRAIN INTO SYSTEMS PROGRAMMING

Are you in a support role now and have an in depth knowledge of IBM utilities and softwar? A well known South London installation would like to offer this excellant opportunity to the right person. SALARY IS NEGOTIABLE BUT WILL BE AROUND £4,500.£5,000 WITH NUMEROUS OTHER BENEFITS.

SENIOR OPERATOR IBM DOS VM

. 2-3 years experience using POWER VS and or VM 1/P end RJE knowledge useful. Company ere gotting a 3031 in the autumn so career progression good and feet. SALARY APPROX. EB, 600 INC. Co. Bonus + Co.; Bonelin

IF YOU ARE INTERESTED IN ANY OF THESE POSI

144 ROYAL EXCHANGE BLOS.

27 NOEL ST. LONDON WIT